



Policy Brief



DYNAMICS OF FOOD PRICES IN MAJOR CITIES OF PAKISTAN

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INTRODUCTION

International food crisis has affected about 49 developing countries including Pakistan. In Pakistan the pattern of food prices is volatile representing the uncertainty in food prices. It is worth mentioning here that high food prices and volatility are considered as two important concepts of food price dynamics. Unlike inflated food prices, volatility measures the risk factor associated with the production and supply of food commodities. On one hand, high growth rate in food prices directly impact the welfare of consumers, while, volatility detracts both producers as well as consumers. According to Filho and Torero (2016) and FAO (2009), in developing countries like Pakistan, household food expenditure share is between fifty to seventy percent. Hence, increase in food prices severely hurt the consumers. According to Tadesse et al. (2016) the determinants of food prices are divided into three groups: 1. exogenous shocks, 2. Market Conditions and Political Environment and 3. Endogenous shocks. It is explained that exogenous factors are the root cause of price fluctuation. These include extreme weather shocks, economic shock, international commodity price shock and oil price shock. The extent of their influences or the saturation of their effect on native economy is partly rest on the market conditions and political situation of the certain country. Factors include in the third group are endogenous shock. They are unrestricted trade policies, speculative activities determined by price expectations, weak administrative control etc. Some other country specific endogenous factors, like role of middle man, hoarding etc. are also important factors. These factors amplify the effect of other factors present in the first and second group.

Realizing the importance of the issue the present research has the following objectives.

- To evaluate the individual price dynamics using the micro-data of fifteen major food commodities; Beef, Chicken, Rice, Wheat, Pulse Mash, Pulse Moong, Pulse Masoor, Tomato, Potato, Garlic, Onion, Sugar, Tea, Milk and Eggs for fourteen cities of Pakistan; Bahawalpur, Faisalabad, Hyderabad, Islamabad, Karachi, Khuzdar, Lahore, Multan, Peshawar, Quetta, Rawalpindi, Sargodha, Sialkot and Sukkur, for the time period 2002 to 2021.
- To assess the volatility in monthly prices of above food commodities.
- To observe the impact of various exogenous and endogenous covariates on food prices over the years.

METHODOLOGY

The first objective of this study is to evaluate the dynamics of food price at city and commodity level over the time period under study. The pattern of price change of each product is evaluated on the



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basis of various indicators. For instance, the duration of price spells, the frequency of price change, the direction of price change, the average size of price change and the degree of synchronization of price change.

To accomplish the second objective of this research, two methods are used. One is standard deviation, which gives the cut-off level of volatility that differentiates the high and low volatile food commodities. The second is Autoregressive Conditional Heteroscedasticity (ARCH)/Generalized ARCH (GARCH) and Integrated GARCH (IGARCH) model.

The third objective of this research is the identification of the factors of change in food prices. . The study uses ARDL bound test by Pesaran, (2001) separately, for each commodity price. The model identifies the long run and short run association among the covariates and prices of each commodity.

FINDINGS

The Pattern of Price Adjustment over the Time

Among the sampled food commodities; vegetables, farm chicken and eggs proved to have the most flexible prices. Analyzing at city level, prices of almost all the food products change less frequently in Khuzdar city than rest of all other cities. It is also noticed that prices of most of the commodities change more frequently in big metropolitan cities, particularly, milk and beef.

For understanding the economic impact of price change at macro level, extensive and intensive margin of inflation are even more important concepts. Hence, in this study, frequency of price change is further disaggregated to determine the frequency of price increase and decrease separately along with the magnitude of these increase and decrease in prices.

It is found that most of the commodities display an increase in prices followed by decrease and thus both frequencies of price increase and decrease are higher. For instance, eggs, farm chicken, tomatoes, onion and potato. On the other hand, other commodities exhibit higher frequency of price increase with seldom decrease in prices, like, tea, milk, beef and rice.

Size of price change clearly envisaged that price of tomatoes record highest magnitude of price change, which is followed by onion. Huge ups and downs in the prices are recorded in the prices of tomatoes because of the production and supply shocks. Although, milk and beef commodities record seldom events of price decrease but the magnitude of these decrease in prices is relatively high. At city level, small but frequent increase in prices of pulses is recorded. Intensive and extensive margin of inflation for pulses shows the transmission of international prices into the domestic market.

As far as synchronization of price change across city is concerned, tea exhibits the higher degree of synchronization among all other products. It is considered that the price of the tea mainly depends on international tea price and exchange rate, hence its price change simultaneously in all cities. Synchronization ratio for tomatoes is relatively higher. Similarly, prices of farm chicken, refined sugar, onion and farm egg are also found relatively well synchronized. Remaining commodities are found to be quasi synchronized. Although, price list of food items are released by government to maintain the harmonized system, however, these results prove the implementation problems and proper check and balance of prevailing prices across cities.

Volatility Assessment



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As the volatility is assessed by the standard deviation and ARCH/ GARCH model, the results of standard deviation highlighted that beef, chicken, egg, sugar and all vegetables are highly volatile over the given period as compare to other commodities. Further, the ARCH-LM test concluded that most of the food price series have short term time varying volatility in their residuals which allow the application of ARCH/ GARCH model. It is elaborated from the results that, in the log return prices of Pulse Mash, Pulse Moong, Pulse Masoor, Rice IRI and Wheat, Milk and Tea for most of the cities; both the residual effects and past variance are responsible for the current volatility. While in log return prices of Sugar, Egg, Onion, Potato, Tomato and Garlic the main reason of volatility in most of the cities is only the external factors.

Factors Affecting Food Prices

On the basis of ARDL bound test the study identifies that there is a negative and significant impact of REER on wheat prices in long run. While real interest rate, has mixed effects on food prices in long run. It inversely affects wheat and rice prices while has direct impact on tea prices. It is noticed that the increase in international crude oil prices significantly increase the prices of vegetables except garlic, further it also increases the prices of chicken, egg, wheat, rice and sugar in long run. The study intensely supports the role of international food price transmission in domestic prices in long run. As the increase in international prices of beef, chicken, wheat, rice, sugar and tea significantly increase their domestic prices. Moreover, the study explains that in long run, the increase in local production of tomato, egg, pulse mash, pulse masoor, and sugar significantly reduce their prices. It is also attributed that government policy of adjusting (increasing) wheat support prices also has a positive and significant impact on wheat prices.

Moreover, results indicate that the log prices of onion, tomato, potato, chicken, egg, wheat and tea would monotonically converges to the equilibrium. It implies that the divergence from the equilibrium level of prices in the current time period would be corrected by 35, 41, 24, 49, 37, 33 and 24 percent respectively in the next month. Whereas, the pace of adjustment is relatively slower for other commodities like beef, milk, pulse mash and sugar.

KEY POLICY RECOMMENDATIONS

Based on the findings of the study suggests the following policy options:

- Study shows small but frequent increase in prices of pulses in all cities. It is worth mentioning here that most of the demand of pulses is fulfilled through import in Pakistan as pulses are cultivated as only catch crop. This shows the transmission of international prices into the domestic market. According to Tadasse et. al. (2016) these sorts of exogenous shocks can be controlled through market conditions and political environment. Hence, on one hand, political and overall economic stability are the key factors to dampen the impact of exogenous shocks and on the other hand, there is a need to increase local production of this low water consumption crop.
- Results show that most of the commodities are found to be quasi synchronized across cities. It is observed that although price list of food items is released by government to maintain the harmonized system, however, these results prove the implementation as well as proper check and balance of prevailing prices across cities.
- It is recommended that the government should formulate a system by making investment to monitor the market prices of highly volatile food commodities (beef, chicken, egg, sugar and vegetables) in each city. It would help to stabilize the food prices.



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- The results of this study highlighted that the wheat support price increase the price of wheat. This increase in wheat prices will decrease the production of other agricultural commodities and ultimately hurt the consumers. Hence there is need to increase per acre yield of wheat instead.
- To encourage the investment in crop production by local farmers, it is important to provide loans at low rate.
- The results exhibits that the high crude oil prices increases the food prices of most of the commodities. As the high international crude oil prices are out of government's control, the government should provide crude oil at subsidize rate to the producers to reduce the input cost.
- Further, there is a need to construct proper transportation system from farms (villages) to the cities' markets to reduce the transportation cost.

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