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CAN FOOD INFLATION BE STABILIZED BY MONETARY POLICY? A QUANTILE REGRESSION APPROACH

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ABSTRACT

Theoretically, a consistent and well-defined monetary policy can stabilize food inflation. However, empirical findings have reported both positive and negative effects of monetary policy measures on food inflation. In the literature, several analytical techniques are used to grasp the impact of monetary policy tools on food inflation in developed and developing nations. Usually, VAR and ARDL approaches are employed to fulfill this task. However, these techniques do not capture the tail dynamics of food inflation. In countries like Pakistan, where food expenditures are a major chunk of the consumption basket and half of the population is either poor or on the verge of poverty, tackling food inflation has always been a major task for policymakers. To capture the effect of monetary policy on various quantiles of food inflation, we have employed the quantile regression approach in this study. We have used the time series data based on monthly observations from September 2005 to October 2020 of food inflation, monetary policy, and several other variables. We have found that monetary policy and transportation prices remain highly significant across all quantiles, exhibiting a positive impact on food inflation. Thus restrictive monetary policy leads to higher flood inflation in the country. In the case of Pakistan, governments usually provide subsidies to lower the impact of food inflation. It is suggested that a restrictive monetary policy is usually not required when a subsidies-focused fiscal policy is implemented.

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INTRODUCTION

Inflation is always and everywhere a monetary phenomenon (Doyin and Ikechkwu, 2013; Sumner, 2022). Literature has agreed with the notion that food inflation is a decisive factor in making inflation-targeting monetary policy in developing countries like Pakistan. In low-income countries, food items have a major share in the consumption basket. Therefore, in such economies, the share of expenditures on food requires a considerable amount of expenditure from insufficient income (Anand et al., 2015; Pourroy et al., 2016). Based on Engel's Law, in developing countries, people spend a huge amount of their income on food; therefore, high food inflation could severely affect the welfare of poor people (Hanif, 2012).

The literature demonstrates that the effect of food inflation on general inflation is a function of food share in the country's consumption basket and income levels (Catão and Chang, 2015; Pourroy et al., 2016). Similarly, food inflation affects both the present and the future (Catão and Chang, 2015). Therefore, in case of poor consideration of food inflation may result in deceptive forecasting of inflation and a vague estimation of the cost of living (Soskic, 2015; Alper et al., 2016). Hence, central banks of low-income countries, which target inflation, must provide the foremost consideration to food prices in inflation dynamics and policy posture (Anand et al., 2015; Catão and Chang, 2015; Pourroy et al., 2016). An important question arises does monetary policy should focus on food inflation? An argument is that since fluctuations in food prices are temporary, which are influenced by supply-side shocks and indicate intense instability (Anand and Prasad, 2010; Moorthy and Kolhar, 2011; Anand et al., 2015; Soskic, 2015; Alper et al., 2016). In contradiction of the above argument, the literature states that the demand-side factors, for example, an increase in income, might uplift food inflation (Pourroy et al., 2016).

In the context of developing and advanced economies, most of the studies employed the vector autoregressive (VAR) or structural VAR techniques during analysis, as the VAR is a mainstay for monetary policy studies. Moreover, the VAR approach only depicts the impacts of shocks in monetary policy (Bernanke et al., 2004), in contrast to the valuable effects of systematic monetary policy decisions. Therefore, shocks in monetary policy ignore the requirement of transparency, credibility, and inflation expectations, which are considered the basis for the inflation targeting framework.

For Pakistan and other inflation-targeting countries, by specifying the key role of food prices, developing the relationship between monetary policy and food inflation is important for policymakers to decrease the outrageous effects of food inflation on poor people. To support Pakistan as a flexible inflation-targeting economy, in contrast to investigating the impact of monetary policy shocks, we focused on the impact of normal and systematic monetary policy on food inflation. Additionally, given the demand and supply shocks dichotomy and tail dynamics resulting from the distribution of food prices, we employed the Quantile regression approach developed by Koenker and Bassett (1978).

The application of quantile regression is a significant divergence from existing literature techniques to measure the monetary policy and food inflation dynamics. Contrary to OLS and VAR methods which are mean-based, quantile regression provides the impact of monetary policy on food inflation among several sections of distribution of food inflation. Hence, quantile regression reveals the moving relationship between regressors and the dependent variable through several sections of distribution of the dependent variable (Benoit and Peol, 2017). It is well known that food inflation exposes the intense volatility and outliers that are inevitable. In this view, Benoit and Peol (2017) stated that mean-based techniques like VAR and OLS turn out to be tricky in case of outliers. Hence, quantile regression is an effective approach to handle such outliers.

In Pakistan, 38.3% of the population is multi-dimensionally poor, while 13% of the population is at risk of poverty (UNDP, 2021). The share of food (and non-alcoholic beverages) in the consumption basket in Pakistan is 36% (PBS, 2019), whereas, in developed countries, it is almost 15% (Alper et al., 2016). Thus, with such a huge poverty level and a share of food expenditures in the consumption basket, food inflation could severely affect the food consumption of 50 percent of the population.

Several studies have been conducted in Pakistan (Khan and Qasim, 1996; Khan and Gill, 2007; Ahsan et al., 2011; Hanif, 2012; Anam et al., 2014; Awan and Imran, 2015; Choudhri et al., 2015; Rehman and Khan, 2015; Qayyum and Sultana, 2018; Afzal and Mian, 2020) regarding food prices and its inflation dynamics, however, there was little emphasis on the monetary policy effects on food inflation, especially, the impact of monetary policy on different quantiles of food inflation. As per the previous discussion, the impact of monetary policy on food inflation is also based on the income level of the country and the share of food in the consumption basket. Therefore, this research explores the said relation in the scenario of Pakistan, which is a typical example of a low-income country with a high share of food in the consumption basket.

Dynamics of Food Inflation in Pakistan

Over the past two decades, Pakistan faced the highest food inflation rates in South Asian countries; it undergoes double-digit food inflation from July 2020 to Dec-2020 and then reached 6.7% in Jan-2021. The highest food inflation rate was in July 2020, which was 17.8% (TradingEconomics.com, 2021).

Figure 1 represents the CPI food inflation in Pakistan from September 2005 to October 2020. The blue highlighted area represents the 2008 recession period (from December 2007 to June 2009), and the green highlighted area represents the Covid-19 Pandemic outbreak that started on January 30, 2020. The graph represents that from 2015 to the first half of 2019, the inflation rate remained in the single digit and then increased to double-digit (12.6 percent) in Aug-2019. At the beginning of the year, 2020 food inflation rate was 23.6 percent. After that, it gradually decreased to 11.7 percent in Apr-2020, and by the end of the year, it was 13.3 percent. The average rate of food inflation in the CPI basket was 1.3 percent, 3.3 percent, 1.5 percent, and 15.5 percent in 2015, 2017, 2019, and 2020 respectively. Consequently, the data represents that the highest average CPI food inflation was in 2020, the recent decade, which was 15.5 percent, followed by 11.2 percent in 2019.

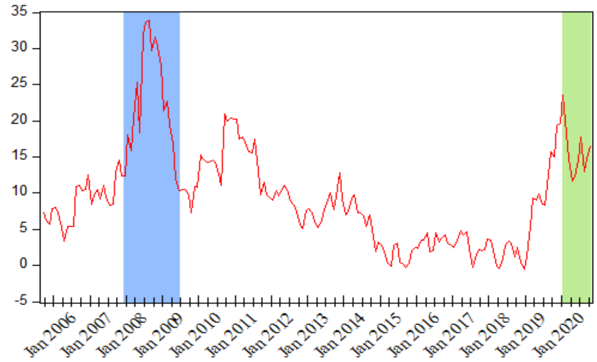

Figure 1. CPI Food Inflation Rate in Pakistan (YoY Change in Percent); Source: (State Bank of Pakistan, Various Issue of Inflation Monitor).

MATERIAL AND METHODS

Data and Variables

The data employed in this study is based on monthly observations of the variables from September 2005 to October 2020 for Pakistan. The variables used in our analysis include food CPI (FI) — a measure for food inflation, State Bank of Pakistan's (SBP) reverse repo rate (MPR) — a proxy for monetary policy; quantum index of manufacturing (QIM) — a proxy for GDP, exchange rate (ER), FAO's world food price index (WFPI) and transport's CPI (TRANS). Several other studies have used these variables for this purpose (Akram, 2009; Hammoudeh et al., 2015; Bhattacharya and Sen Gupta, 2018; Bhattacharya and Jain, 2019; Iddrisu and Alagidede, 2020).

The data on food CPI and transport CPI is collected from various issues of SBP's monthly publications on inflation. The data on REER, MPR, and QIM is gathered from various issues of SBP's monthly statistical bulletin. While the WFPI data is collected from the FAO website. A brief explanation of the individual selected variables is as follows.

Monetary Policy Rate (MPR): State Bank of Pakistan's reverse repo rate is used as a proxy for the monetary policy rate (MPR). It is measured in percentage per annum. The reverse repo rate is also known as the discount rate and policy rate. It is the rate at which banks borrow money from the central bank, i.e., SBP, on an overnight basis.

Food Inflation (FI): Food CPI is used as a measure for food inflation (FI) in this study. It is measured in percentage per annum. It denotes the change in the price index of food and non-alcoholic beverages in a specific month of a year from the same month of the previous year.

Exchange Rate (ER): The United States (US) dollar persists as the dominant foreign currency for international trade in Pakistan. Therefore, we used the monthly average exchange rate between the Pakistan Rupee and the US dollar as the exchange rate.

Quantum Index of Manufacturing (QIM): Quantum Index of Manufacturing is a proxy for the gross domestic product (GDP). The quantum index of manufacturing is measured in percentage, and it determines the change in the production of large-scale manufacturing industries (LSMI) on a monthly basis.

Transport (TRANS): Transport CPI is used as a representation of the transportation price index measured in percentage. It measures the change in the transportation prices within the CPI basket in a specific month of a year as compared to the same month of the previous year.

World Food Price Index (WFPI): It measures the fluctuation in food prices in the international market; it is calculated by FAO on a monthly basis and cumulatively on a yearly basis.

Econometric Model

We have employed the quantile regression technique to explore the effect of monetary policy and confounding variables on different quantiles of food inflation in Pakistan. Quantile regression methodology determines the relationship among dependent and independent variables on a quantile basis, i.e., 20th, 40th, 50th, 60th, and 80th quantile, to capture the relationship on different distributions. The quantile regression developed by Koenker and Hallock (2001) can be expressed as:

$$f_t = x_t\beta + \mu_t \qquad (1)$$

$$E(f_t|x_t) = x_t\beta \qquad (2)$$

$$Qf_t(\theta|x_t) = x_t\beta_\theta \qquad (3)$$

$$\beta_\theta = \beta + \gamma F^{-1}(\theta) \qquad (4)$$

In quantile regression, it is assumed that error terms are independently identically distributed. Here, F represents the cumulative distribution function of μ_t and γ represents a constant. Whereas θ represents the number of quantiles and $Qf_t(\theta|x_t)$ denotes covariates provided for the conditional quantile function of food inflation. There are 182 observations, and the dependent variable is divided into 20th, 40th, 50th, 60th, and 80th quantiles in such a way that each quantile possesses a significant number of observations to avoid the problem of degree of freedom and inappropriate results.

The term β_θ denotes the vector of parameters for a specific quantile to be determined. The coefficient of the quantile indicates the marginal effects of independent variables on food inflation at a point in the respective quantile of food inflation. The term x_t indicates the vector of covariates and μ_t represents the error term assumed to be of any form of distribution, a unique feature of quantile regression.

The minimization of the following loss function is to be carried out to estimate the coefficients of pre-described equations.

$$\min_{\beta_\theta \in \Re^p} \sum_{t=1}^{T} \rho_\theta(f_t - x_t\beta_\theta) \qquad (5)$$

Here, ρ is equal to the dimension of β_θ. We simplify the loss function of equation (5), which can be written as:

$$\rho_\theta(\mu) = \mu\big(\theta - I(\mu < 0)\big) \qquad (6)$$

Where i represent an indicator function that takes value 1 when $\mu<0$ and takes value 0; otherwise, the sum of the absolute values of the residuals is minimized in quantile regression that is divergent from the mean-based methods (Iddrisu and Alagidede, 2020), we use the natural logarithm of all the variables except transport prices.

RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics of the selected variables. It indicates that all variables are normally distributed.

Stationarity Test

In the case of time times analysis, testing the stationarity of the variables is the first step toward empirical analysis (Menegaki, 2019). We have employed the Aumented Dickey Fuller (1981) and the Phillips and Perron (1988) test to evaluate the stationarity of the variables. Table 2 illustrates that FI, MPR, and ER are non-stationary at the level and stationary at the first difference in both ADF and PP tests. The QIM is non-stationary at the level in the ADF test, whereas it is stationary at the level of the PP test and the first difference in both the ADF and PP tests case. The variables WFPI is stationary at the level in ADF while non-stationary in the PP test, whereas TRANS shows a reverse trend as compared to WFPI. All the variables are statistically significant at the first difference in both ADF & PP tests.

Table 1. Descriptive Statistics.

Statistics	FI	MPR	QIM	ER	TRANS	WFPI
Mean	9.76	8.49	121.88	97.53	7.07	102.17
Median	9.03	9.00	118.42	98.02	5.80	97.76
Maximum	33.93	15.00	175.17	167.71	39.95	137.61
Minimum	-0.60	4.25	85.59	59.71	-14.95	68.41
Jarque-Bera	44.99***	6.82**	16.23***	18.61***	4.98*	4.73*
Observations	182	182	182	182	182	182

Note: *, ** and *** means significant at 10%, 5% and 1% level of significance respectively; Source: Author's Calculation.

Table 2. Stationarity Test.

Variables	ADF Test		PP Test	
	Level	First Difference	Level	First Difference
FI	-1.502	-5.675***	-2.277	-14.570***
MPR	-1.559	-6.814***	-1.476	-12.181***
QIM	-1.065	-5.558***	-3.372**	-23.263***
ER	0.952	-9.383***	1.355	-9.378***
WFPI	-2.742*	-6.523***	-2.507	-6.483***
TRANS	-2.051	-6.412***	-2.921**	-9.936***

Note: *, ** and *** means significant at 10%, 5% and 1% level of significance respectively; Lag length is based on AIC & probability based on Mackinnon (1996) one-side p-value; Source: Author's Calculation.

Quantile Regression Estimates

The quantile regression captures the relationship between food inflation and other independent variables among several sections of food inflation distributions (20th, 40th, 50th, 60th, and 80th quantile). The empirical form of the quantile regression with tau 0.5 is as follows.

$$FI = C + MPR + QIM + ER + WFPIreal + TRAN$$

The estimates of quantile regression are shown in Table 3. The estimates show that the restricted monetary policy positively and significantly impacts food inflation across all the quantiles. The increase in interest rates due to restricted monetary policy increases the cost of capital, leading to an increase in product prices. Due to the rising cost of capital, firms tend to employ more labor force as compared to capital which drives wages upward (Bhattacharya and Jain, 2019). As the food industry is labor intensive, the increase in labor wages ultimately pushes food inflation upward (Gaiotti and Secchi, 2006; Henzel et al., 2009).

The result indicates that when the monetary policy rate increases by 01 percent, the food inflation will increase by 1.56, 1.64, 1.60, 1.42, and 1.33 percentage points at the 20th, 40th, 50th, 60^{th,} and 80th quantiles, respectively. The result of quantile regression represents that OLS (mean-based approach) overestimates the impact of monetary policy on food inflation. These results are in line with the findings of Bhattacharya and Jain (2019), Iddrisu and Alagidede (2020), and Makun (2021) that monetary policy rate have a positive and significant impact on food inflation.

The result shows that transportation prices are positive and statistically significant across all the quantiles. The estimate shows that a 1% increase in transportation cost increases food inflation by about 0.01 percentage points across all the quantiles. The transportation cost is considered one of the most important factors in food inflation because it indicates the cost of food distribution throughout the country to the end consumer. Fitrawaty et al. (2020) stated that as transportation costs increase, the price of commodities also increases, and the same is endorsed by the findings of Iddrisu and Alagidede (2020).

For exchange rate, we find that it has a statistically significant and negative impact on food inflation at the 20th and a statistically significant and positive impact at the 80th quantile. The exchange rate affects food prices in two ways. The first one is the share of food imported from foreign countries and the second one is the number of imported intermediate goods, i.e., the technology employed in food production domestically. Therefore, the fluctuations in exchange rate exhibit fluctuation in the prices of such imported goods and technologies. It implies that a 1 percent increase in the rupees to dollar exchange rate decreases food inflation by 0.47 percentage points on the 20th. Whereas a 1 percent increase in rupees to dollar exchange rate increases food inflation by 0.3 percentage points at the 80th quantile. The negative relationship between exchange rate and food inflation is found by earlier studies of Salman et al. (2014) and Awan and Imran (2015) in Pakistan, while the positive relation is consistent with the findings of Okotori (2019), Iddrisu and Alagidede (2020), Dua and Goel (2021) and Makun (2021).

Table 3. Quantile Regression Estimates.

Variable	OLS	20th Quantile	40th Quantile	50th Quantile	60th Quantile	80th Quantile
MPR	1.608***	1.557***	1.639***	1.595***	1.422***	1.330***
	(0.167)	(0.167)	(0.136)	(0.152)	(0.171)	(0.144)
TRANS	0.009*	0.016***	0.010**	0.012**	0.013**	0.008*
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
ER	0.173	-0.477*	-0.110	-0.147	0.030	0.292*
	(0.195)	(0.249)	(0.028)	(0.259)	(0.254)	(0.158)
WFPIreal	1.752***	2.069***	1.778***	1.445***	1.360***	1.157***
	(0.365)	(0.267)	(0.258)	(0.270)	(0.288)	(0.241)
QIM	-0.546	0.211	0.304	0.189	0.039	-0.665*
	(0.420)	(0.495)	(0.471)	(0.501)	(0.517)	(0.301)
Constant	-7.672***	-10.032***	-10.692***	-8.284***	-7.488***	-3.947**
	(2.474)	(2.285)	(2.063)	(2.228)	(2.404)	(1.669)
R-Squared	0.618					
F- Statistic	55.023***					
Observations	176	176	176	176	176	176

Note: *, ** and *** represents significant at 10%, 5% and 1% level of significance respectively; Value in parenthesis () represents the standard error; Source: Author's Calculation.

We find a positive and statistically significant impact of the real-world food price index (WFPI) on food inflation across all quantiles. The results indicate that a 1 percent increase in the world food price index increases food inflation by 2.06, 1.78, 1.44, 1.36, and 1.15 percentage points at the 20th, 40th, 50th, 60th, and 80th quantiles, respectively. The impact of WFPI on FI diminishes from 2.06 to 1.15 percentage points while moving from the 20th to the 80th quantile. The OLS underestimates the impact compared to 20th and 40th and overestimates to the 50th, 60th and 80th quantiles. The reason behind the response of local food prices to the world food price index is that Pakistan is an open economy; hence, fluctuations in the world food price index influence the prices of goods domestically. Ilmia et al. (2017) reported that in an era of globalization, developing economies are more susceptible to shocks in world market prices as compared to developed nations. Hilegebrial (2015), Iddrisu and Alagidede (2020), and Makun (2021) found a positive relationship between world food prices and local food prices.

Relating to QIMz, which is used as a proxy of the GDP, we have found that it has a negative and statistically significant effect on food inflation at the 80th quantile. This is not unusual as the growth rate, and industrial development in the country have not shown a significant improvement during the last decades in Pakistan. Egwuma et al. (2017) and Makun (2021) found a positive influence of GDP on inflation, and Abdullah and Kalim (2012), Awan and Imran (2015), and Qayyum and Sultana (2018) also found the same results for Pakistan. The R-squared of the OLS model shows that 61.8% of the dependent variable is explained by the independent variables.

Robustness Check

We have investigated our results' robustness by changing the variables' specifications and sample period. We have employed the real effective exchange rate instead of the nominal exchange rate, which measures a weighted average of a basket of foreign currencies of major trading partners of Pakistan. The estimates in Table 4 show that the monetary policy's impact is positive and statistically significant across all the quantiles. We have observed the negative impact of the nominal exchange rate in the earlier model. It has been observed that the real effective exchange rate also exhibits a negative and statistically significant impact on food inflation across all the quantiles. The coefficient of the nominal exchange rate of Rupees to US dollar expresses that as the Rupee depreciates, Pakistan's exports become less expensive.

We have also considered the nominal WFPI instead of the real WFPI to check robustness. Table 5 represents the results of our intervention in the model; we find the same impact of monetary policy and WFPI on food inflation across all the quantiles. Although the magnitude of the impact of nominal WFPI diminishes as compared to real WFPI, the results are in the same direction and statistically significant. Moreover, we have employed a different sample period from July 2009 to January 2020 as compared to September 2005 to October 2020. This period covers data after the 2008 recession (the reported timeline of the recession is December 2007 to June 2009) and before the Covid-19 pandemic (declared outbreak on January 30, 2020). Table 6 represents the results of monetary policy impact on food inflation during the different sample periods. It indicates that the monetary policy still has the same and statistically significant impact on food inflation across all the quantiles and is consistent with the previous results.

Table 4. Quantile Regression Estimates Considering Real Effective Exchange Rate.

Variable	*OLS*	*20th Quantile*	*40th Quantile*	*50th Quantile*	*60th Quantile*	*80th Quantile*
MPR	0.750***	1.143***	1.117***	1.156***	0.871***	0.543**
	(0.244)	(0.438)	(0.326)	(0.327)	(0.330)	(0.229)
TRANS	0.010**	0.011***	0.013***	0.013**	0.009*	0.011**
	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
REER	-3.908***	-1.394	-2.424*	-1.929	-3.255**	-3.873**
	(0.869)	(1.683)	(1.415)	(1.363)	(1.334)	(0.793)
WFPIreal	1.859***	2.158***	1.745***	1.444***	1.424***	1.018***
	(0.346)	(0.3370	(0.282)	(0.294)	(0.293)	(0.292)
QIM	-0.447	-0.636	-0.066	0.107	-0.004	-0.145
	(0.348)	(0.457)	(0.401)	(0.337)	(0.306)	(0.302)
Constant	12.092**	-1.106	3.074	1.384	8.879	15.169***
	(5.014)	(9.295)	(7.786)	(7.707)	(6.873)	(4.309)
R-Squared	0.657					
F- Statistic	65.134***					
Observations	176	176	176	176	176	176

Note: ** and *** represents significant at 5% and 1% level of significance respectively; Value in parenthesis () represents the standard error; Source: Author's Calculation.

Table 5.Quantile Regression Estimates Considering Nominal WFPI instead of real WFPI.

Variable	*OLS*	*20th Quantile*	*40th Quantile*	*50th Quantile*	*60th Quantile*	*80th Quantile*
MPR	1.620***	1.636***	1.676***	1.680***	1.492***	1.341***
	(0.169)	(0.195)	(0.155)	(0.166)	(0.187)	(0.149)
TRANS	0.008	0.012**	0.005	0.007	0.007	0.011**
	(0.005)	(0.005)	(0.006)	(0.007)	(0.007)	(0.005)
ER	0.112	-0.495*	-0.369	-0.278	-0.028	0.147
	(0.200)	(0.291)	(0.279)	(0.294)	(0.283)	(0.160)
WFPI	1.070***	1.375***	1.092***	0.922***	0.861***	0.695***
	(0.263)	(0.212)	(0.201)	(0.196)	(0.205)	(0.212)
QIM	-0.486	0.183	0.448	0.290	0.063	-0.437
	(0.427)	(0.513)	(0.499)	(0.532)	(0.538)	(0.285)
Constant	-4.561**	-6.753***	-7.103***	-5.916***	-5.147**	-2.291
	(2.234)	(2.386)	(2.105)	(2.085)	(2.243)	(1.645)
R-Squared	0.605					
F- Statistic	52.032***					
Observations	176	176	176	176	176	176

Note: ** and *** represents significant at 5% and 1% level of significance respectively; Value in parenthesis () represents the standard error; Source: Author's Calculation.

Table 6. Quantile Regression Estimates Considering different sample periods (July 2009 to January 2020).

Variable	*OLS*	*20th Quantile*	*40th Quantile*	*50th Quantile*	*60th Quantile*	*80th Quantile*
MPR	1.438***	1.521***	1.586***	1.472***	1.408***	1.098***
	(0.197)	(0.218)	(0.167)	(0.173)	(0.184)	(0.166)
TRANS	0.015*	0.018*	0.005	0.013*	0.014*	0.019**
	(0.008)	(0.009)	(0.008)	(0.007)	(0.008)	(0.008)
ER	-0.034	-0.276	0.050	-0.023	0.110	0.447
	(0.463)	(0.665)	(0.534)	(0.378)	(0.301)	(0.277)
WFPIreal	3.663***	2.919***	2.657***	2.088***	1.919***	1.851***
	(0.819)	(1.078)	(0.688)	(0.473)	(0.449)	(0.452)
QIM	0.311	0.490	0.511	0.410	0.492	-0.024
	(0.557)	(0.633)	(0.530)	(0.469)	(0.459)	(0.463)
Constant	-19.541***	-16.214**	-16.449***	-12.695***	-12.720***	-10.687***
	(5.652)	(7.417)	(5.111)	(3.759)	(3.432)	(3.402)
R-Squared	0.661					
F- Statistic	44.848***					
Observations	121	121	121	121	121	121

Note: ** and *** represents significant at 5% and 1% level of significance respectively; Value in parenthesis () represents the standard error; Source: Author's Calculation.

CONCLUSIONS AND RECOMMENDATIONS

In countries like Pakistan, where half of the population faces food security challenges, tackling general inflation and food inflation are important policy agendas for policymakers and central banks. However, restrictive monetary policy destabilizes food inflation. Moreover, food prices significantly influence overall inflation in many countries. Remarkably, literature on monetary policy impacts on food inflation is limited in Pakistan, where food items have a dominant share in the consumption basket. Therefore, this endeavor aims to fill this literature gap by finding evidence from Pakistan, which has a flexible inflation-targeting country.

We have found a positive and statistically significant impact of monetary policy on food inflation across all the quantiles. Results exhibits that tight monetary policy can destabilize the food inflation in the country, whereas the magnitude of destabilization is more obvious on left tail dynamics. Prevailing literature has the gap to explain such tail dynamics explored in this study. Furthermore, transport prices significantly and positively impact food inflation across all the quantiles. The food prices are not responsive to the QIM in Pakistan due to poor growth rate, how at the 80th quantile, it has a statistically negative impact on food inflation. WFPI shows a statistically significant and positive impact on food prices, as Pakistan is an open economy and vulnerable to global fluctuation in food markets. Whereas the exchange rate of rupees to the US dollar has a negative impact on the 20th quantile and while the positive influence on the 80th quantile of food inflation.

From a policy point of view, a sustained restrictive monetary policy suggested by Bhattacharya and Jain (2019) can stabilize the prices through negative effects (by aggregate demand channel) that overlook the positive effect on food prices (by the cost of production channel). As sustainable economic growth is a big challenge for Pakistan, the restricted monetary policy may affect the economic growth of the country. Well-defined and consistent monetary and fiscal policies can increase prosperity by ensuring sustainable growth (Ginn and Pourroy, 2019; Iddrisu and Alagidede, 2020). Therefore, a restrictive monetary policy is not required when a fiscal policy that subsidizes food prices is implemented. However, such fiscal policy intervention may have difficulties or consequences for the fiscal budget of the country.

This study has postulated a significant input in the prevailing literature about the relationship between monetary policy and food inflation in Pakistan. We faced a lack of data availability. If data is available in the future, one can apply quantile regression on more distributions of data to capture the effects of monetary policy on food inflation.

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