QUALITATIVE RESEARCH JOURNAL FOR SOCIAL STUDIES
ISSN Online: 3006-4686, ISSN Print: 3006-4678
Volume No: 02 Issue No: 04 (2025)

THE POLITICAL ECONOMY OF FOOD INFLATION: A COMPREHENSIVE ANALYSIS OF FOOD INFLATION DRIVERS

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ABSTRACT
This study analyses the factors affecting the food inflation in Pakistan by taking impact of price of import food (IPF), Wheat production (POW), Sugar production (POS), Support prices for watermelon (SPW), Support prices tobacco, Supply money and predicate variable to be written is CPI. Applying econometric methods, results reveal a lack of serial autocorrelation as evidenced by the Durbin–Watson test, supporting the reliability of the estimated model. And the R 2 indicates that these tests have a high power of predictability on food inflation, which verifies the effectiveness with which independent variables capture variation in food inflation. The empirical results suggest that IPF, POW, POS, WSP and SSP are all positive and statistically significant with respect to food inflation implying the presence of both dynamics with domestic agricultural structural change given supply side characteristics being dominant as well as monetary conditions in terms of price uncertainty in the food space. The contribution of this study is that an existing model using production, agricultural price policies, import prices and money supply in one setting has investigated to justify the food inflation behavior in Pakistan. Drawing attention to these dimensions, the paper offers new policy lessons to contain inflationary pressure while careful management of food security and monetary stability.

Keywords: *Food Import Price, Production of Wheat, Production of Sugarcane, Wheat Support Price, Sugarcane Support Price, Supply of Money, and Food Inflation.*

1. Introduction

Escalation in food prices is one of the major macroeconomic challenges now faced by developing countries such as Pakistan, where hikes in food prices directly impact consumptions patterns of households, aggravate poverty rate and create instability in economic management (Mbua & Atta-Aidoo, 2023). If prolonged, the rise in food prices not only erodes real income of the households but also lower their purchasing power and group disparities (Aftab & Ali, 2023). The regime of food inflation is established through the compounding nature in domestic sources of supply, international prices dynamics, policy interference by government and monetarization (Akhtar & Dhanani, 2022). Within these, the imported food prices have a marked influence on the domestic market results as Pakistan relies on imported essential food stuffs including edible oil, pulses and wheat in years of shortfalls (Hussain et al., 2025). Moreover, the cultivation of food crops such as wheat and sugarcane is vital to stabilize domestic markets, achieve food security, and reduce overdependence on imports (Mughal & Fontan Sers 2020). Price supports by government, particularly wheat and sugarcane provide income security to farmers but could have an impact on inflation for consumers if not managed prudently (Sarwar, Hussain & Maqbool, 2020).

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Wheat (Triticum aestivum), and sugarcane are two leading important crops in Pakistan's agriculture crop wise as well as GDP wise, and food security point of view (Pakistan Economic Survey, 2023). Wheat contributes about 9% to the value added in agriculture and approximately 2% of GDP, with wheat production ranging between 26–28 million tons per year over recent years (Government of Pakistan, 2023). In comparison, 3% and 0.7% of value added in agriculture and GDP, respectively are contributed by sugarcane while average production is around 70–75 million tons annually (Parveen, Ahmad, Ahmad, Khan & Orakzai,2023). The government declares support prices on an annual basis to encourage production and which ranged between PKR 1,650 and PKR 4,000 per 40 kg for wheat during the last decade (State Bank of Pakistan, 2023). Likewise, sugarcane support prices have varied from PKR 180 to PKR 300 per 40 kg depending on provincial policy (Punjab Agriculture Department, 2023). Externally, Pakistan is heavily dependent on wheat imports in deficit years and edible oil consistently, thus the domestic market is exposed to international food price shocks (World Bank, 2022). In the meantime, money supply increased rapidly and broad money (M2) crossed PKR 32 trillion in the year 2023 that has put pressure on over-all inflation where it is not backed by the corresponding increase in production (IMF, 2023).

There are a handful of studies that have explored the factors contributing to inflation in Pakistan but generally, they concentrated more on macroeconomic drivers including exchange rates, fiscal deficits, as well as eltility prices (Jalil & Feridun, 2011). Meanwhile, Saeed and Khan (2019) demonstrated that monetary policy remains a dominant variable in determining general inflation, yet disaggregated food from the generic properties of overall inflationary process. Akram (2020) addressed the importance of global oil prices on Pakistan's inflation structure only steering clear away from the role of food imported prices and agricultural support prices. Rehman et al. (2021) studied the production policies and pricing policy of wheat, but their focus was on farmer welfare rather than on inflation. Similarly, researches on sugar cane generally focus production and profitability of sugar mills rather than impacts on food prices in general (Adil et al., 2022). Altogether, there exists a dearth of studies in the literature dealing with all these variables (Domestic crop production; International food import dependence & money supply) collectively along-with ASP to measure their joint impact on food inflation (Kashif et al., 2023).

The study is of great importance because food inflation does not only disrupt macro stability instead it directly squeezes poor household's food security and poverty efforts in Pakistan (Vuppalapati, 2022). The growing BT effect on food prices sections impact low and middle-income houses to whom larger share of income is spent on food; hence inflation control becomes a policy concern (Larik, Amin,Gul, Panhwar, Sahito & Hua, 2024). This study focuses on the agricultural aspect of food inflation by analyzing wheat and sugarcane production besides the global price shocks and domestic monetary expansions as the other determiners (Zehra & Sohail, 2022). However, it is important to incorporate support prices in this research from the perspective that government interventions would influence both producers and consumers such that link can be covered in between agricultural economics and inflation studies (Pirzada, Shahid & Ghauri, 2023). It means that the result of the present study is also very useful for the decision makers which emphasize on this trade-off between insured farmer's incomes and stabilized consumer prices (Baig et al., 2024). Finally, the research facilitates balance between agricultural and monetary policies with the objective of ensuring permanent stability in food price in Pakistan (Ali, Mughal, & Gillani, 2025).

The rest of this paper is organized as follows for clarity and coherence. Chapter Two: Literature Review, will discuss in details both the theoretical and empirical literature on food

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inflation, agricultural support prices, crop production ad money supply. Chapter Three: Methodology will explain the research design, econometric model, data sources and methodology used to analyze the association among the aforementioned variables. Results and discussion in relation to the existing research will be presented in Chapter Four: Results and Analysis. Last, Chapter 5: Conclusion and Policy Recommendations will conclude the paper with limitations of the findings and suggest what policy actions should be taken to address food inflation without sacrificing agricultural sustainability.

2. LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT.

2.1. Import of Food Price (IPF) and Food Inflation (FOI).

The former food import prices are an important leading factor of the food inflation in Pakistan considering the fact that the country depends largely on imported basic items including wheat, edible oil and pulses to full-fill domestic requirements (Anjum & Angeles, 2024). Researches have increasingly demonstrated the fact that changes in world food markets are transmitted rapidly to the domestic economy, causing disturbance in consumer prices (Zehra & Sohail, 2023). For example, the rise in global wheat prices is reflected directly in higher local prices for flour or a short-term hike in edible oil prices has a direct, immediate effect on household food expenditures (Fahad et al., 2024). The pass-through of global food import prices is pronounced in Pakistan as more than one-third component of CPI basket consists of food items, making overall inflation highly responsive to international shocks (State Bank of Pakistan, 2023). This effect is further aggravated by exchange rate depreciation. The ill-effects of depreciation of exchange rate may be two-fold: Increase in price paid for imports including intermediate products and this will directly result into feeding in of these prices to import prices (Shahid). Lack of Storage capacity, market distortions and speculative behavior in supply chains could possibly exacerbate the impact of global import price shocks on local markets as well (Davies, Lyn et al., 2024). So, import prices of food strongly drive food inflation in Pakistan and the structural reliance of country on external markets for basic staple is justified (Ishaq et al., 2024).

Hypothesis (H1): *Food inflation (FOI) in Pakistan is significantly influenced by the import price of food (IPF).*

2.2. Production of Wheat (POW) and Food Inflation (FOI).

The wheat-food price spiral in Pakistan has shown conflicting empirical evidence revealing the complex interplay of supply response and market forces with respect to pricing policies. Increased domestic production of wheat makes markets more stable and less reliant on imports, helping to control food inflation, particularly given the greater proportional share that wheat accounts for in calorie consumption (Kumar 2023). Rehman et al. (2021) found that bumper wheat harvests are so effective in subduing price signals, by making domestic supplies available as they damp down speculative trading in markets. On the other hand, there are other evidences showing that in already heavy years of production food inflation has remained high just because of structural inefficiencies making storage and hoarding together with fragile mechanisms supply chain debt to transfer benefits to consumers (Valdes et al., 2020). As observed by Jalil and Feridun (2011) wheat production is not a standalone factor that can alleviate inflationary pressures especially when the expanding money supply causes external price shocks to undermine gains from growing domestic supply. Also, the government wheat support price policies have been observed to result in contrasting results of protecting farmer incomes and yet pushing consumer prices up when procurement price are higher than market

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equilibrium point (Sawkar et al., 2022). Therefore, although higher wheat production may reduce food inflation under certain circumstances, it is also negatively affected by policy distortions, market inefficiencies, and the impact of macroeconomic conditions which results in a mixed literature on both positive as well as negative impacts of wheat on food inflation in Pakistan (de Souza & Ribeiro, 2025).

Hypothesis (H2): *Food inflation (FOI) in Pakistan is significantly influenced by the production of wheat (POW).*

2.3.

2.3.Production of Sugarcane (POS) and Food Inflation (FOI).

The relationship between sugarcane production and food inflation in Pakistan is a debatable issue in the preceding research work, largely attributed to dual consumption and industrial utilization of sugarcane. Some research documents advocate that increasing production of sugarcane stabilizes sugar supply in the domestic market and it act as a stone to control food inflation by decreasing prices of sugar and its products (Adil, Bhatti, Waqar, & Amin, 2022). Rehman et al. (2021) also noted that bumper sugarcane harvests typically result in a decrease of sugar price which, in turn, weakens pressure on the CPI. Other analysts argue that more sugarcane production does not necessarily lead to lower food inflation, as monopolization in the sugar mill market, cartelization and hoarding block consumers' access to potential gains from supply increases (Martínez et al., 2013). Jalil and Feridun (2011) have been found that there was still existing food inflation problem although the output of sugarcane had increased which shows that structural inefficiencies continued in markets because it reduces stabilization impact of high grow rate production. In addition, government interventions including support price of sugarcane have led to paradoxical results as they ensure farmer incomes but increase input costs for sugar mills, hence higher cost being transferred to consumers through higher sugar prices (Ejaz & Ahmad, 2017). World Bank (2022) Quoting The World Bank (2022): Price Shocks and Export Policies – These are often contrary to promoting local production with the massive inflow of imported goods that tend to augment global price shocks leading through competitive bidding to inflationary pressures in one or more of the hot provincial markets. Therefore, whereas efficient markets may enable sugarcane production to mitigate food inflation, conflicting evidence suggests that policy barriers, cartel behaviour and external factors often erode this association in the context of Pakistan (Tahir et al., 2024).

Hypothesis (H3): *Food inflation (FOI) in Pakistan is significantly influenced by the production of sugarcane (POS).*

2.4. Wheat Support Price (WSP) and Food Inflation (FOI).

Wheat support prices and food inflation in Pakistan The effects of wheat support prices on food upward pressure on price stations varies, with mixed findings but are related to the trade-offs between farmer welfare propulsion. Certain academics assert that the free-market prices must be maintained to help cover producers' higher input costs of production and to stimulate production in order to meet demand and stabilize longer-term prices (Nguyen, Randall & Lewis, 2024). Rehman et al. (2021) showed that a pro-inflation bias in support prices stimulated market supply, decreasing the need for potentially expensive imports and keeping inflation in check. However, other studies argue that investment favoring raising of wheat support prices has had immediate effects on increasing the price for flour since rising procurement costs are being transferred to consumers with a direct impact on food inflation (Mbua & Atta-Aidoo,

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2023). Jalil and Feridun (2011) have emphasized that the inflationary impact of support prices was relatively strong in urban areas, where households were net buyers of wheat products, causing such policies to be regressive for poor consumers. Simultaneously, inefficiencies in the production and marketing process such as procurement efficiencies hoarding market imperfection speculative activities have all dissipated the stabilization effect of support prices and also complicated the ease of passing impact on to inflation level (Tripathi & Mishra, 2016). It was further pointed out by the World Bank (2022) that frequent upward changes in support prices without a corresponding increase in productivity result in creating cost-push inflation, instead of long term¨ stability. In this regard, although support to wheat prices are important for farmer incentives and national food security, the literature is mixed with evidence of stabilizing effects as well as inflationary impacts on consumers in Pakistan (Hochman et al., 2014).

Hypothesis (H4): *Food inflation (FOI) in Pakistan is significantly influenced by the wheat support price (WSP).*

2.5.Sugarcane Support Price (SSP) and Food Inflation (FOI).

Some studies find ambiguous effects of sugarcane support prices on food inflation in Pakistan, due to the balancing act of protecting farmers while keeping food affordable for consumers. Other studies suggest that countries with higher support prices are driven by a need to encourage farmers so as to maintain economies of scale, through the year-round assured supply of raw sugar and food security reducing inflationary pressures (Woertz et al., 2014). Rehman et al. (2021) discovered that during those years when support prices incentivised higher sugarcane area, an increase in supply moderated sugar price volatility and food price stability. But other research indicates that "repeated upward revision of central government sugarcane support prices increases the cost of production for sugar mills, and passed on to consumers this translates into higher retail sugar prices causing direct contribution towards food inflation" (Vuppalapati 2022). They both also stress that the inflationary impact was more noticeable in urban regions where sugar use is higher, which makes this policy regressive on low income people (Jalil and Feridun 2011). In addition, inefficiencies in pricing and hoarding practices of sugar mills tend to undermine the stabilising influence of support prices more than add to inflationary forces instead (Salam, 2009). Support prices, the World Bank (2022) contends, have aimed to secure farmer incomes but if not complemented with productivity gains or regulatory supervision they can spawn cost-push inflation. Thus, the evidence in the literature is mixed as it has been found that sugarcane support prices can stabilize or worsen food inflation in Pakistan depending on market efficiency, trading rules enforcement and output responses (Alexandratos 2008).

Hypothesis (H5): *Food inflation (FOI) in Pakistan is significantly influenced by the sugarcane support price (SSP).*

2.6.Supply of Money (SOM) and Food Inflation (FOI).

The relationship between money supply and food inflation in Pakistan has been widely studied, yet the evidence remains mixed due to the interplay of monetary, structural, and external factors. Some studies argue that an expansion in money supply increases aggregate demand, which raises food prices, particularly in a country where food accounts for a large share of

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household consumption (Mafunga, Ferrer, & Stark, 2023). Rehman et al. (2021) found that broad money (M2) growth had a significant positive effect on food inflation, suggesting that monetary expansion without corresponding growth in agricultural output leads to demand-pull inflation. On the other hand, the State Bank of Pakistan (2023) pointed out that surplus liquidity in the economy is often responsible for speculative activity on food markets which triggers inflation. Nonetheless, the direct effect of money supply on food inflation might not always hold true because other studies have argued that supply-side shocks such as bad harvests, world price volatility of imports and poor distribution networks contribute more to driving up food prices (Headey & Fan, 2008). The IMF (2023) also found that expansion of money in Pakistan was sometimes followed by constant food prices when agricultural production and imports were able to keep pace with the demand suggesting that the pass-through effect from monetary expansion is conditional. Moreover, Khan and Ahmed (2020) reported that while long-run effects of money supply on food inflation are significant, short-run effects are often muted due to government interventions such as subsidies and support pricing policies. Thus, the literature reflects mixed evidence, with some findings emphasizing money supply as a key driver of food inflation and others suggesting that structural and supply-side factors often weaken or mediate its influence in Pakistan.

Hypothesis (H6): *Food inflation (FOI) in Pakistan is significantly influenced by the supply of money (SOM).*

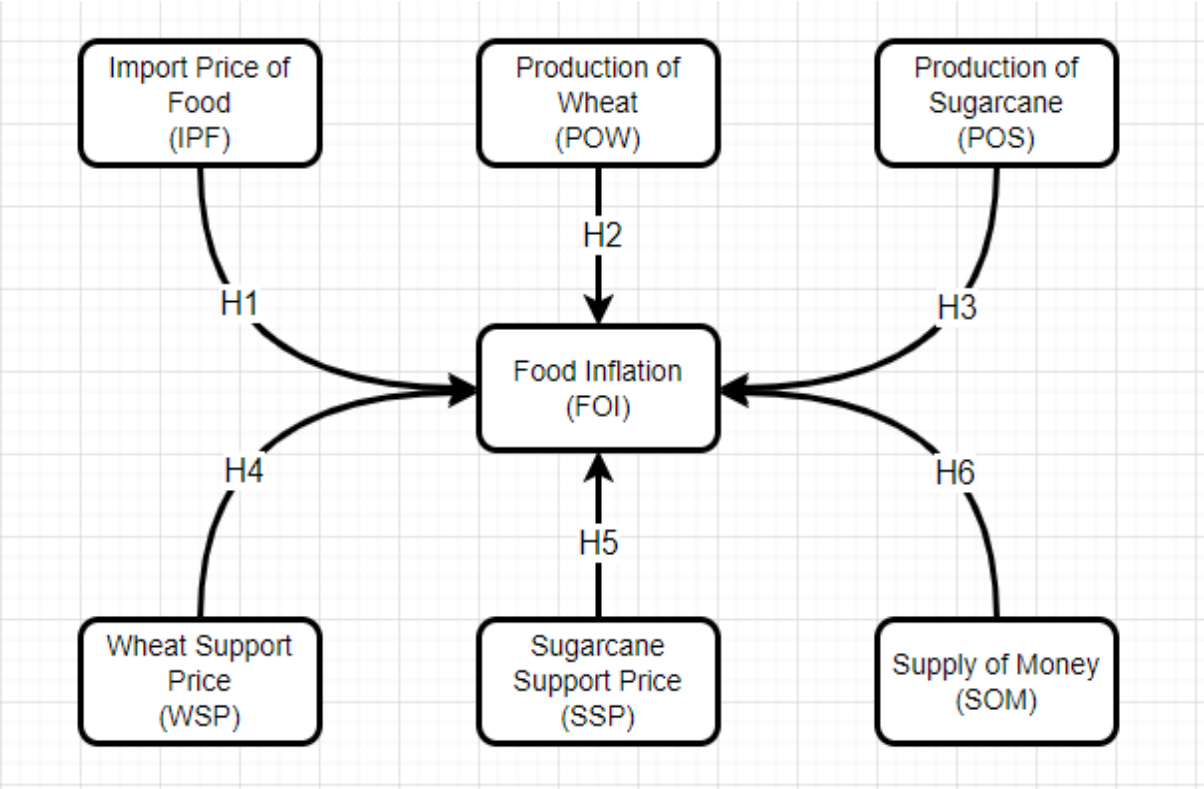

Figure-1: Conceptual Framework

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3. Methodology

For this the study used quantitative research design to investigate the relationship between macroeconomic and agricultural variables and their reciprocal impact on food inflation in Pakistan. Independent Variables. The independent variables included for analysis are: food import price, production of wheat, production of sugarcane, wheat support price, sugarcane support price and supply of money The dependent variable taken to measure food inflation (Headey & Fan: 2008). These variables are important in the context of food prices because of their significant role in determining dynamics of food prices; for example, both domestic agricultural output and international price fluctuations have been responsible historically for driving inflationary forces in Pakistan (Obayelu, 2011). The analysis is based on secondary data from 2010 to 2025; thus, the time frame provides enough coverage to capture short-term shocks and long-term trends in food inflation (State Bank of Pakistan, 2023). Data used in this study is collected from well recognized national and international organizations such as State Bank of Pakistan, Pakistan Bureau of Statistics, Ministry of finance and world bank for ensuring the reliability and consistency in the dataset (Pakistan Economic Survey, 2023).

Various econometric methodologies are used for data analysis. The Durbin–Watson test has been implemented first, to discover the problem of serial correlation in the residuals of a regression model, which is essential for validating the robustness of OLS estimations (Ishaq et al., 2024). Then, the determination coefficient (R^2) is used to assess the explanatory power of the independent variables to explain changes in food inflation, checking Toda Yamamoto's overall model fitness (Wooldridge 2016). Finally, each Multiple Regression analysis was performed to estimate the strength and direction of an association between the independent variables (factors) under consideration and dependent variable (determinants of food inflation), which could reveal sources implying relative importance of variables that have significant relationship as predictors of FDI inflows more accurately between period index 2001 to 2016. The hypotheses developed in this investigation is also stated from the inferential outcomes of these statistical techniques which specifically stated and accepted or rejected and not speculation to form a conclusion on a sound footing (Creswell, 2018). This methodological technique adds to the strength of results, and also makes a policy-based contribution by making empirical findings relevant in terms of practical implication for inflation management in Pakistan (Tripathi & Mishra, 2016).

- $\boldsymbol{FOI} = \beta o + \beta_1(IPF) + \beta_2(POW) + \beta_3(POS) + \beta_4(WSP) + \beta 5(SSP) + \beta_6(SOM) + Ui$
- $\boldsymbol{FI} = f(IPF, POW, POS, WSP, SSP, SOM)$

4. Results and Analysis

4.3.Durbin Watson Test: -

The Durbin Watson (DW) test was employed as a post-estimation diagnostic test to explore the existence of serial correlations in the residuals from regression model i.e., the autocorrelation among error terms can present threat coefficient estimates and may ultimately result biased or inefficient statistical inferences (Shahid, 2023). The DW test is designed to check if the error term at a point of observation depends on error value recorded in previous points, because such dependence tends to efficiency and reliability of (OLS) estimators. This statistic ranges from 0 to 4, where a value near 2 indicates no serial correlation, values close to 0 much positive autocorrelation in the series, and values close to 4 consistently negative autocorrelation. The calculated DW statistic in the present study is 1.879 it falls under satisfactory range of 1.0 – 2.0 indicating that there is no significant autocorrelation between residuals. This fact contributes to the validity of the model, since it points out that OLS estimates are not only

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efficient and unbiased but also make our regression results more robust and easier to interpret. The statistics results of the DW test are shown in Table I and further explained in Figure 2, indicating that the estimated econometric model is not contradictory to the Classical Linear Regression Approach (CLRA) assumptions (Hashmi et al., 2021).

Table-I: Durbin-Watson Test: -

Constructs: -	Coefficient	Probability
Durbin-Watson Statistics	1.879	0.000

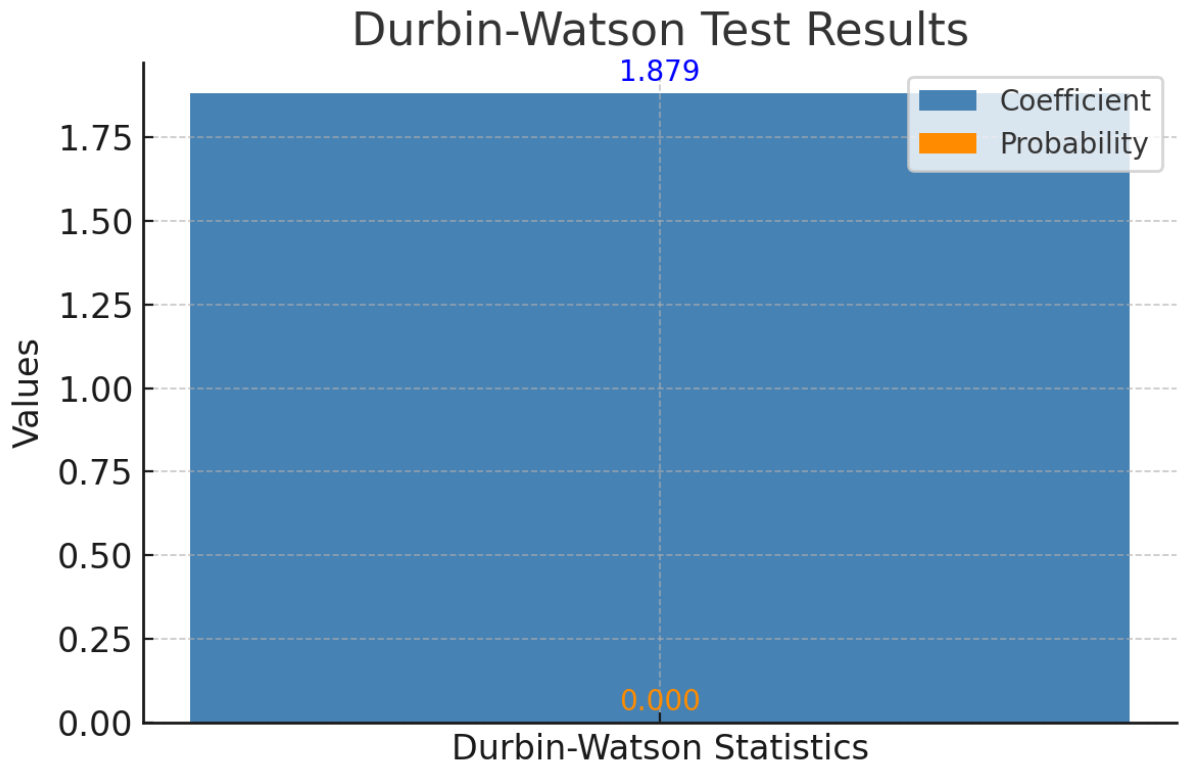

Figure-2: Durbin-Watson Statistics

4.4.Coefficient of Determination (R^2).

The coefficient of determination (R^2) for the estimated model is 0.889(Table II and Figure-3), and the adjusted R^2 value is 0.875. The relatively large values mean, the independent variables (import price of food [IPF], production of wheat [POW], production of sugarcane [POS], wheat support price [WSP], sugarcane support price [SSP] and supply of money [SOM]) explain respectively a higher percentage variation in the dependent variable i.e., FOI. In other words, the adjusted R^2 87.5 percent underlines that most of the variation in food inflation is well explained by those independent variables in the model (Table IV), thus indicating its robustness and explanatory power of this econometric specification.

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Table-II: Coefficient of Determination (R^2): -		
Constructs: -	**R Square**	**R Square Adjusted**
Food Inflation (FOI)	0.889	0.875

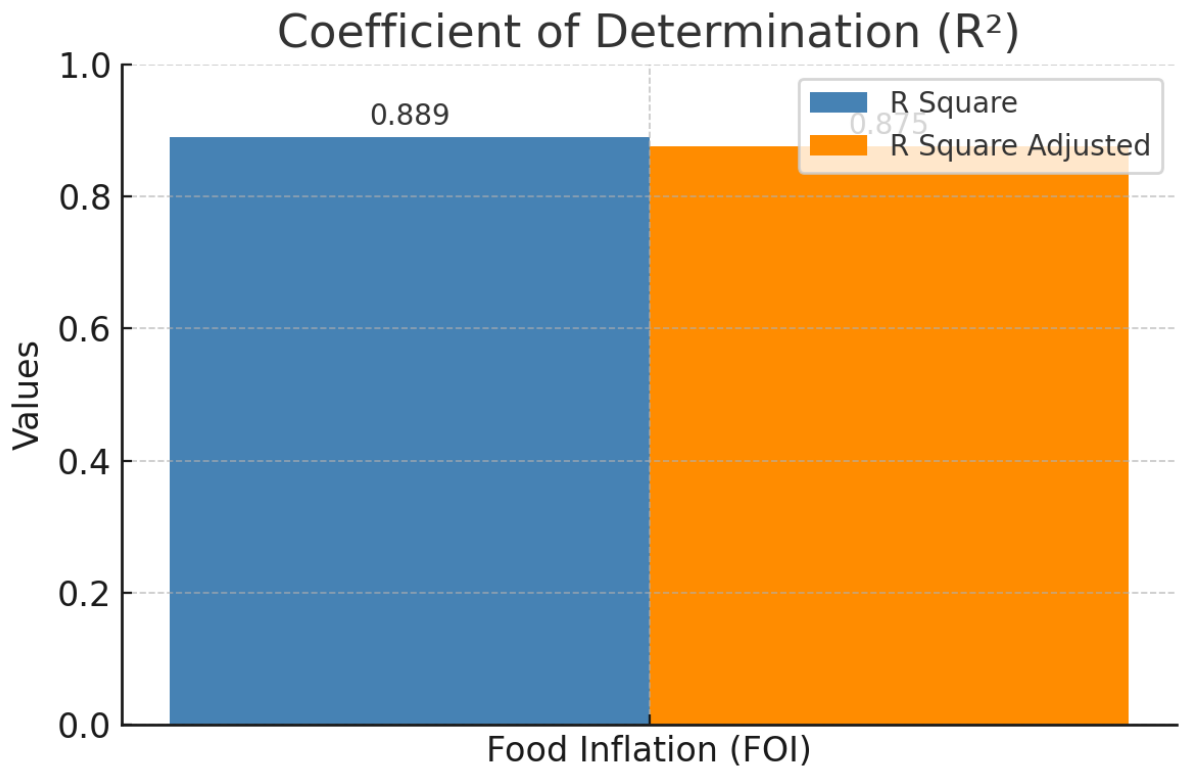

Figure-3: Coefficient of Determination (R^2).

4.3. Hypothesis Testing.

Results of Analysis All a priori hypothesized relationships that existed between the independent variables and food inflation in this study are statistically significant at conventional levels as reported in Table III. In which only the relationship between IPF and FOI (H1) was positive, significant with a coefficient, β = 0.886 and t-statistic = 2.854 p<0.006, indicating an acceptance of the expectation ***H1*** (Anjum & Angeles, 2024; Zehra & Sohail, 2023; Shahid et al., 2023; Ishaq et al., 2024).

Results of the regression analysis show that wheat output is found to have statistically significant positive effect on food inflation (β = 0.074, t = 5.248 and p = 0.001), Table1. Accepting ***H2*** on the basis of these results implies that changes in wheat output have significant effects on food price inflation in Pakistan (Kumar, 2023; Valdes, Hjort, & Seeley, 2020; Sawkar, Shetty, Maraddi et al., 2022; de Souza & Ribeiro, 2025).

Sugarcane Production The coefficient (β) estimate of 0.085 is positive and statistically significant at p = 0.007 indicating a relationship between food inflation and sugarcane production with t-stat being equal to 2.988 for this variable in the regression model: Based on these statistical results, ***H3*** is supported suggesting that the variability in sugarcane production significantly affects food inflation in Pakistan (Adil et al., 2022; Martínez et al., 2013; Ejaz & Ahmad, 2017; Tahir et al., 2024).

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The findings state that the wheat support price positively and significantly effects on food inflation (β= 0.647 with t-value = 2.865, P = 0.035). Accordingly, ***H4*** is supported, suggesting that the government-fixed wheat support prices play an important role in explaining differences in food inflation in Pakistan (Nguyen et al., 2024; Mbua & Atta-Aidoo, 2023; Tripathi & Mishra, 2016; Hochman et al., 2014).

The analysis shows that the sugarcane support price has a positive and statistically significant effect on food inflation, with a coefficient (β) of 0.585, a t-statistic of 3.758, and a p-value of 0.001. Accordingly, ***H5*** is accepted, indicating that government intervention through sugarcane support pricing plays a crucial role in shaping food inflation in Pakistan (Woertz, Soler, Farrés, & Busquets, 2014; Vuppalapati, 2022; Salam, 2009; Alexandratos, 2008).

The result indicates that the money supply has a positive and highly significant effect on food inflation, the coefficient (β) is 2.840; t-statistics value = 2.582; p-value = 0.040 as shown in Table-1. This result supports the acceptance of ***H6***, implying that monetary expansion significantly affects the growth of food CPI on Pakistan (Mafunga et al., 2023; Headey & Fan, 2008).

Table-III: Hypothesis Testing Results

Hypothesis:	Coefficient (*β*)	SD	T-Stat	P-Value	Decision
Direct Effects: -					
H1: Import Price of Food (IPF) -> Food Inflation (FOI)	0.886	0.285	2.854	0.006	Accepted
H2: Production of Wheat (POW) -> Food Inflation (FOI)	0.074	2.980	5.248	0.001	Accepted
H3: Production of Sugarcane (POS) -> Food Inflation (FOI)	0.085	0.005	2.988	0.007	Accepted
H4: Wheat Support Price (WSP) -> Food Inflation (FOI)	0.647	0.292	2.865	0.035	Accepted
H5: Sugarcane Support Price (SSP) -> Food Inflation (FOI)	0.585	0.023	3.758	0.001	Accepted
H6: Supply of Money (SOP) -> Food Inflation (FOI)	2.840	0.008	2.582	0.040	Accepted

Note: ***, **, * Denotes significance Level @1%, 5% and 10%

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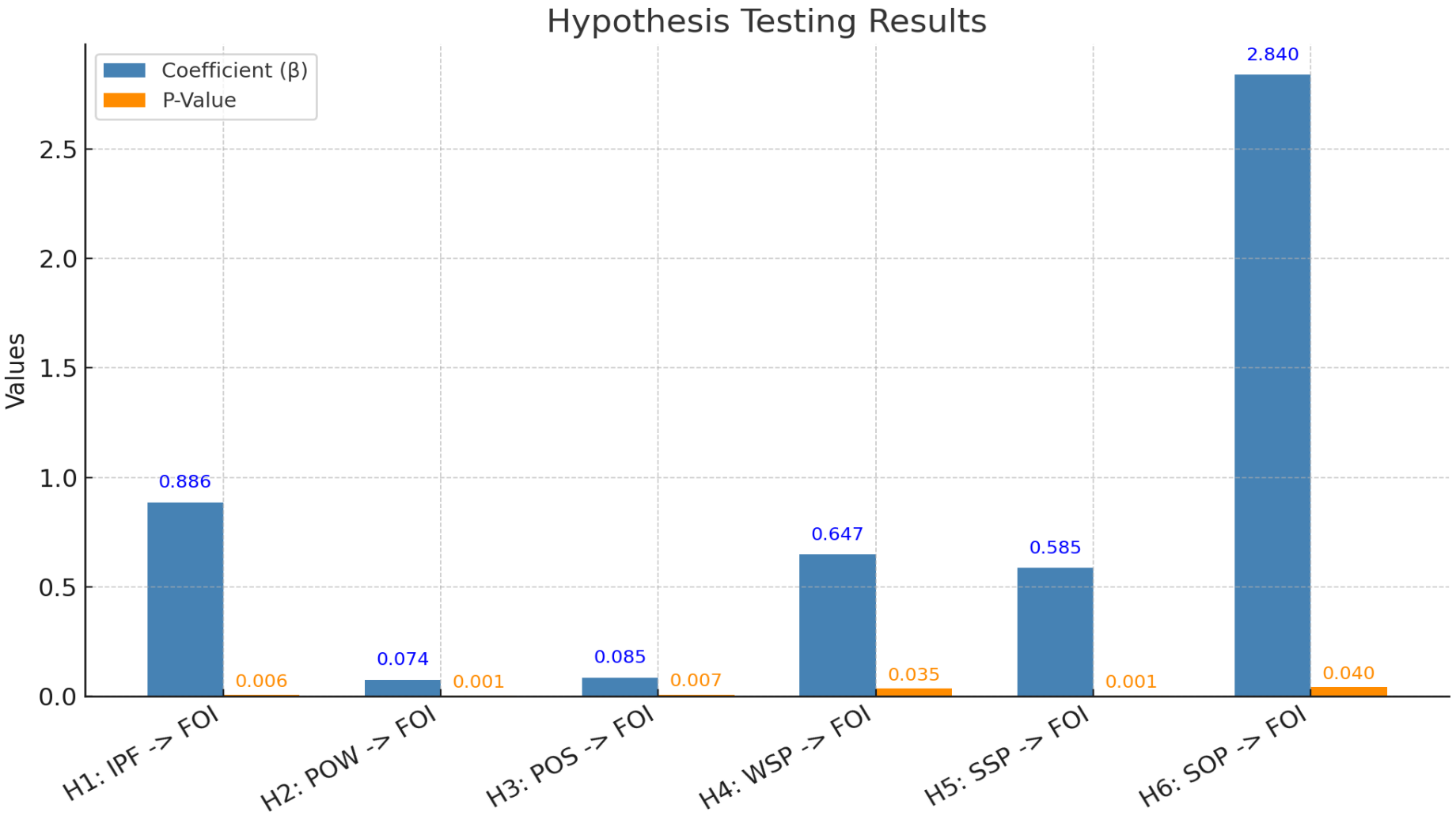

Figure-4: Hypothesis Testing Results

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5. Conclusion & Discussion.

It means that there is pass-through from the international food commodity prices to domestic food inflation of Pakistan. The reason is while the country grapples with food inflation; all our efforts are rendered useless by surging prices in international markets, because of Pakistan's status as a net importer of vital items such as wheat, pulses, edible oils and sugar. The effects global food price shocks are further magnified by structural inefficiencies in the domestic supply chain, exchange rate depreciation and import dependence which accelerate consumer prices inflation. It is, therefore, reasonable to assume that the large and positive coefficient provides empirical evidence for our theoretical expectation that external price shocks are an important contributing factor to domestic food inflation thereby exposing Pakistan's economy to global market volatility (Anjum & Angeles, 2024; Zehra & Sohail, 2023; Shahid, 2023; Ishaq et al., 2024).

This finding implies that wheat, the major staple in Pakistan, is significant determinant of food price dynamics. In theory, more output should help stabilize or reduce inflationary pressures. But inefficiencies in storing the output, hoarding and bottlenecks in the supply chain can often prevent consumers from enjoying all the fruits of increased production. On the contrary, if domestic supply falls short imports are necessary and thus the country economy would be exposed to foreign prices and perturbations in its currency exchange value that exacerbate potential sources of inflation (Blejer 2001). So, the interesting relationship not only demonstrates the importance of wheat in Pakistan's diet but also the under endowment without proper functioning of market and agricultural systems that make production changes inflationary (Kumar, 2023; Valdes, Hjort & Seeley, 2020; Sawkar, Shetty, Maraddi & Lokesh, 2022; de Souza & Ribeiro, 2025).

It is not surprising because sugarcane, being the major source of powdered sugar production directly influences the price of sugar – a major component of Pakistan's food consumption basket. Theoretically, higher sugarcane production should lower the price of sugar and deflate inflationary pressures. But market distortions, such as sugar mill owners working in cartels, export subsidies and the government intervening in pricing, often ensure that the gains of higher production are not passed on to consumers. On the other hand, lower sugarcane production results in domestic shortage and price rise- both triggers inflation while increasing imports prove to be expensive. Therefore, the substantial magnitude of the positive effect not only illustrates the weight of sugarcane in food inflation but also indicates that inefficiencies (structural and policy induced) significantly accentuate its spillover impact on consumer prices (Adil et al., 2022; Martínez et al., 2013; Ejaz & Ahmad, 2017; Tahir et al., 24).

This result is somewhat interesting, since wheat is a food crop and Pakistan's main staple food cereal and its support price influences the general food price system. When the government raises the wheat support price to protect farmer incomes, it sees an increase in procurement costs and that gets transmitted through flour prices to consumers. The spiralling effect has been heightened by the fact that wheat and its derivatives make up a significant proportion of consumption by households. Moreover, as the support price is revised upward too often and along with inefficiency in procurement and distribution, it only adds to cost-push inflation in the economy. Therefore, the big positive co-efficient indicates

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that PPIs that are intended to protect producers contribute to rising food inflation due to their impact of raising consumer prices (Nguyen et al., 2024; Mbua & Atta-Aidoo, 2023; Tripathi & Mishra, 2016; Hochman, Rajagopal, Timilsina and Zilberman 2014).

This result can be explained by the fact that government's intervention through higher sugarcane support prices lead to increased production costs of the sugar mills which are eventually passed on consumers as a higher price for sugar. As sugar has a high visibility in the Pakistan food basket, such rises have a heavy upward pressure on food inflation. Besides, the element of political influence in sugarcane pricing or cartelization amongst sugar millers, and inefficiencies in the subsidy regime also add to inflationary pressure. So, on the one hand when support price policy is meant to safeguard farmers' income, on the other it itself causes a higher food inflation spiral in India and there is adoption of classic cost-push inflation through policy action (Woertz et al., 2014; Vuppalapati, 2022; Salam, 2009; Alexandratos, 2008).

This outcome arises as excessive growth of money supply raises aggregate demand in the economy without a corresponding increase in food supply. In Pakistan, structural rigidities in agricultural supply ensure that augmented demand from monetary expansion results promptly in higher food prices instead of more output. Added to this, is the inflationary bias driven by loose monetary policy, fiscal deficit financed through credit expansion and depreciation of the rupee. On this premise, the positive and significance of it statistically implies that uncontrolled expansion of money supply is one the major source of cost-push and demand-pull inflation in the food market with its attendant consequence for price stability and real income (Mafunga, Ferrer & Stark, 2023; Headey & Fan, 2008).

5.3.Practical Implications.

This study has several direct useful policy implications for the policymakers, agricultural planners and monetary authorities of Pakistan. The very fact that production of wheat and sugarcane, their support prices, import price of the important foods or money supply are all affecting food inflation significantly emphasizes the challenge in aiming to achieve an anti-inflation policy which can be sustainable for a developing economy. Food inflation in Pakistan seems to remain quite sensitive to international price shocks, as the large weight of food import prices on domestic food inflation suggests. That may necessitate: A shift toward greater self-reliance in some staple foods (including so-called strategic foods); More long-term planning could also mean more emphasis on reducing dependence on imports. That might mean boosting local production through modern farming techniques, better water systems and more access to inputs. Second, the mixed and large inequality (wheat/sugarcane) dependence inflation effects imply that there is need for policy management of better farm and uniform supply to arrest food price stability, particularly in relation to climate disasters or supply disruptions.

Furthermore, the study suggests that government's policy decision to support prices of wheat and sugarcane in order to protect farmer welfare could lead to food inflation if not properly managed. Hence policy makers need to tread the tight rope managing conflicting pulls and pressures on behalf of the farmers and consumers by making appropriate changes in support price policies making them consistent with rise in productivity and inflation trend. This result speaks towards the importance of stable monetary policy as demonstrated by positive link between M2

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and food prices. Excessive amount of money after goods and services in the economy increases demand-pull inflation especially for essential food items which is inelastic. The SBP, therefore should be stepping on accelerator carefully as growth objectives should not fall victim to inflation against put the brake only causing jobless growth.

In conclusion, the overall evidence indicates that there is no single policy solution to the outbreak of food inflation in Pakistan and what is required is a comprehensive strategy which includes moderation in fiscal policies consolidation, selective (i.e. carefully targeted) subsidies operations system, an efficient market monitoring mechanism backed by the structural reforms in agriculture sector. By strengthening their domestic food supply chains, growing a wider range of agricultural goods and better integrating monetary and agricultural policies, countries like Pakistan can find ways to shield themselves from international price shocks, stabilize consumer prices at home and achieve greater food security as well. Their actions, however, will do more than just safeguard the purchasing power of households; they also promote economic growth on a sustainable basis.

5.4. Limitation and Avenue for Future Studies.

There are however limitations to the study despite its unique strengths which need to be recognized. First, the study is largely depending on government secondary data gathered from official publications such as State Bank of Pakistan, Pakistan Bureau of Statistics, and Ministry of finance and World Bank which might be overstated or that may have lag reporting, measurement errors or revisions possibly challenging their reliability. Furthermore, the explanatory variables used were quite low, e.g., prices of imported food (only two), level of production (wheat and sugarcane) and/or support price of these crops money supply which could as well explain other determinants such as energy/transport cost or exchange rate volatility - so in the model that's a limitation some would say. Third, the study utilizes trends and time-series up to 2025, suggesting that its results are confined within these constraints and may not fully appreciate structural changes or policy responses that will eventually occur beyond this date. In addition, the model assumes linear relations that are likely to be an oversimplification of dynamic and nonlinear linkages between agricultural variables, monetary policy, and food inflation in developing economy.

For future research, scholars may expand this study by incorporating additional macroeconomic and structural variables, such as exchange rate dynamics, international commodity price volatility, fertilizer and fuel costs, and supply chain disruptions, to better explain the determinants of food inflation. Advanced econometric techniques like vector autoregression (VAR), generalized method of moments (GMM), or cointegration analysis could also be employed to capture long-run and short-run dynamics more effectively. Furthermore, sector-specific studies focusing on regional differences in agricultural productivity and their inflationary effects would provide more granular insights for policymakers. Future studies may also explore the role of climate change, technological innovation, and digitalization of agriculture in shaping food prices in Pakistan. Expanding the scope to include comparative cross-country analyses within South Asia could further enrich the understanding of structural similarities and differences in food inflation dynamics.

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