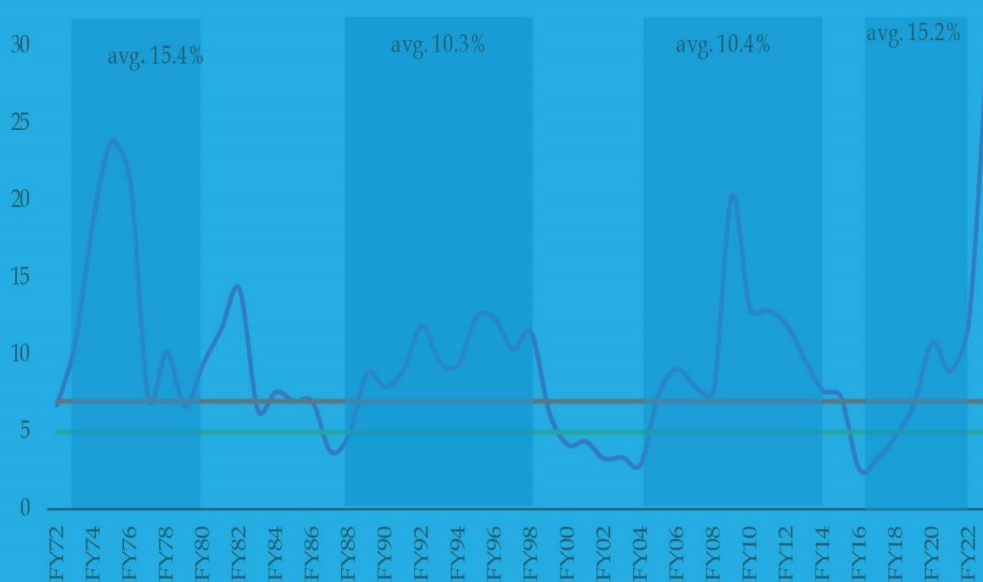


# Inflation Dynamics in Pakistan: Determinants and Structural Challenges

Pakistan has been experiencing a visible surge in inflation since 2020. Historical trends show that Pakistan's inflation has been consistently high. This is both in comparison to peer economies, and in relation to the estimates of the country's threshold level of inflation, in light of which Pakistan's inflation has been high for more than 30 of the last 50 years in four different episodes: FY73-FY78; FY89-FY98; FY05-15; and FY20 to H1-FY24. Focussing on the latter two episodes, this chapter shows that government borrowing, inflation expectations, political and economic uncertainty, and exchange rate depreciation have been the leading drivers of inflation since 2020, whereas money supply, high government borrowing and uncertainty were the most pronounced determinants in the previous episode. In addition to the macroeconomic factors that drive inflation in the short term, the chapter sheds light on key policy and structural factors that impact inflation over the medium to long term. These include: fiscal and debt policy, trade openness, administered energy prices, productivity and demographic trends. The chapter concludes that whilst monetary policy is important to contain demand pressures and prevent de-anchoring of inflation expectations regardless of its sources, long term secular decline in inflation hinges on addressing the structural challenges, strengthening the monetary policy framework to better anchor inflation expectations, and ensuring prudent fiscal and debt policy.





## 6.1 Introduction

Inflation has re-emerged as a global problem in recent years, with countries facing inflationary pressures across regions and income groups. Prior to the recent episode, the long-term trend in both Advanced Economies (AEs) and Emerging and Developing Economies (EMDEs) points towards a secular decline in inflation. This disinflationary path is evident across different metrics, such as headline, core, energy and food price inflation.<sup>1</sup>

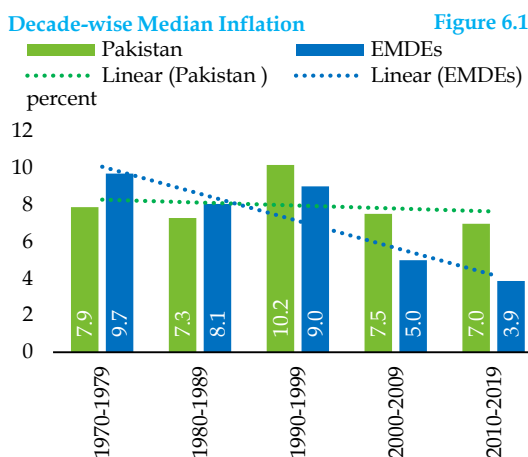
In line with the recent global inflationary trends, Pakistan too has been experiencing a surge in inflation since FY20, after having witnessed slight disinflation between 1970-2019. However, contrary to long term global trends, the decline in inflation in Pakistan has been insignificant (**Figure 6.1**) leading to considerably high inflation compared to AEs, EMDEs and Low Middle Income Countries (LMICs). Inflation in

Pakistan also tends to peak higher, even when inflation peaks in AEs, EMDEs and LMICs (**Figures 6.2a, 6.2b & 6.2c**).

Specifically, inflation in Pakistan has remained above the EMDEs' median for 61 percent of the sample period (1970-2023), and 31 percent of the time it has been on or above the third quartile. Inflation in Pakistan has also historically remained above the LMICs' median for 66 percent of the sample period, and for 21 percent it has been on or above LMICs' third quartile. The gap between inflation in Pakistan and the median inflation of AEs and EMDEs has also grown over the last two decades.

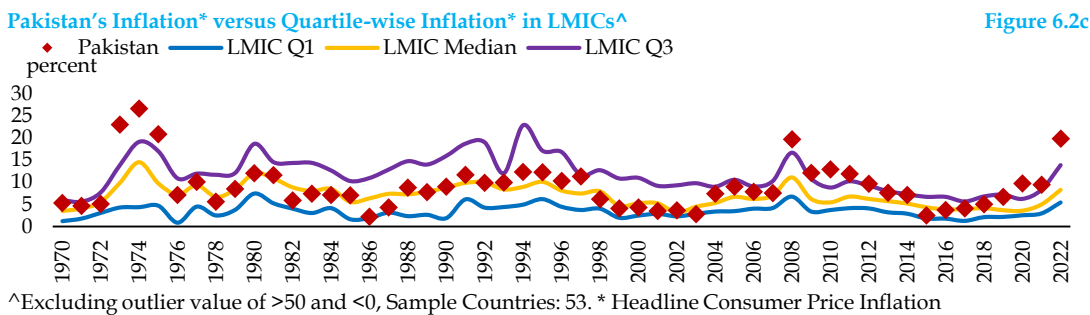
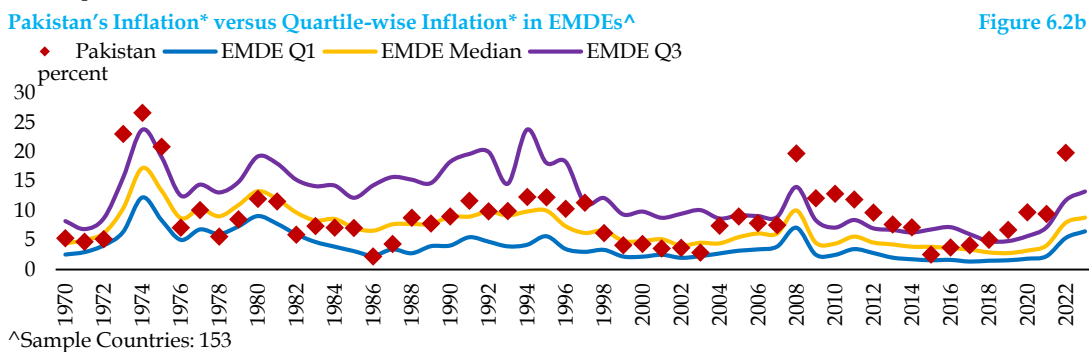
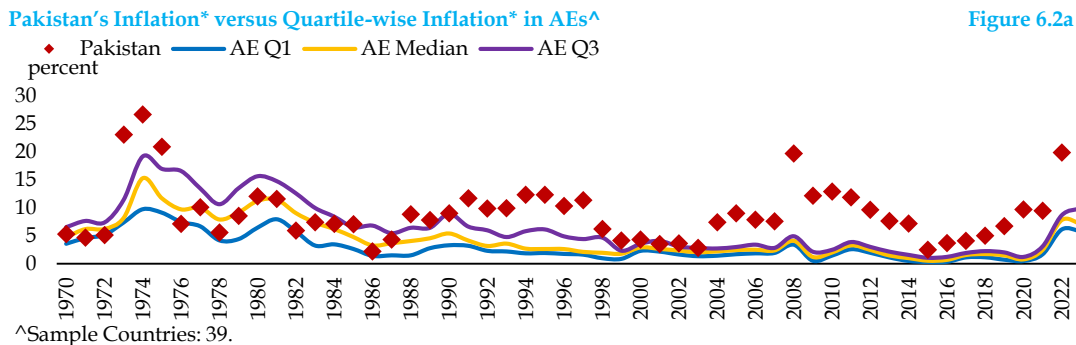
Moreover, inflation in Pakistan has been higher than the threshold inflation, estimated to be 7 percent (**Box 6.1**), during two-thirds of the sample period (1970-2023). During this period, the country has had four high inflationary episodes when average annual inflation was consistently above the 7 percent threshold for more than three consecutive years. These are: (a) FY73-FY78; (b) FY89-FY98; (c) FY05-FY15; and (d) the ongoing episode (FY20 to H1-FY24) (**Figure 6.3**).

In most of these episodes, Pakistan's headline, as well as food and energy, inflation has been comparatively higher than that of peers (**Figures 6.4a & 6.4b**). This lends weight to the notion that Pakistan's economy is vulnerable to global



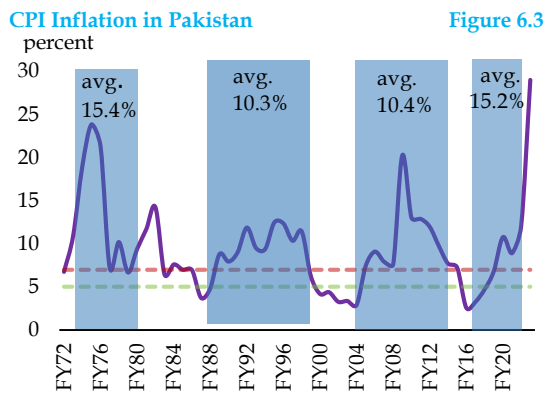
Source: Ha, J. et al. (2023)

<sup>1</sup> Ha, J. et al. (2019)



Source: Ha, J. et al. (2023)

as well as domestic demand and supply shocks. These include high global commodity prices, particularly oil prices, expansionary fiscal policy, monetary expansion, political and economic uncertainty, exchange rate adjustments, and domestic floods or droughts. However, ocular evidence suggests that each of these shocks did not necessarily appear in all of the identified episodes, whereas their intensity also varied in different episodes.



The red and green dotted lines denote the medium term inflation target of 5-7%.

Source: Pakistan Bureau of Statistics

**Box 6.1: Threshold Level of Inflation in Pakistan**

The estimation of threshold inflation, beyond which there exists a negative relationship between inflation and economic growth, varies due to several reasons. These include differences in methodologies, sample period and data frequency used in empirical analysis. It also varies from one country to another depending on country characteristics, such as size and frequency of shocks, fiscal policy, monetary policy framework and degree of trade openness. For Pakistan, the level of threshold inflation is estimated to be around 7 percent as midpoint of various recent estimates, which is in line with the upper bound of the government’s medium term target of 5 – 7 percent.

Mubarik (2005), using annual data from 1973 to 2000, finds that a negative relationship between output growth and inflation in Pakistan turns significant after 7 percent, getting even worse after inflation rises above 9 percent. Arby and Ali (2017), using annual data over 1976-2017, conclude that inflation beyond 5.7 percent can hurt economic growth in Pakistan. Similarly, Hussain and Rehman (2020) estimate, based on annual data for 1976-2016, the non-accelerating inflation rate of unemployment (NAIRU)<sup>a</sup> in Pakistan to be in the range of 7 – 8 percent. Earlier studies have estimated Pakistan’s threshold inflation at 8 percent (Sarel, 1996), 4 – 6 percent (Hussain, 2005), and 5 percent (Vinayagathan, 2013). Similar to Pakistan, both the range of estimates and precise thresholds also vary for EMDEs on account of reasons mentioned above. However, recent studies estimate threshold inflation at round 5 – 8 percent for Asian EMDEs and 7 – 9 percent for Sub-Saharan African EMDEs (Ha, J. et al. 2019).

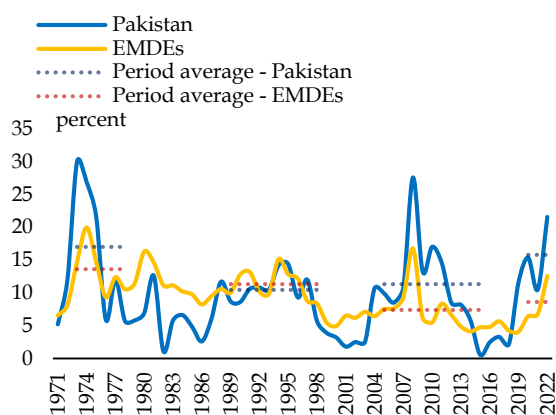
<sup>a</sup>NAIRU is the lowest unemployment rate that can be sustained without causing wage growth and inflation to rise.

For instance, three of the four identified high inflationary episodes in Pakistan have been marked by rising global oil prices (Figure 6.5a). Similarly, an expansionary fiscal policy has been a recurring feature affecting inflation outturns in all these episodes (Figure 6.5b). Between FY76-

FY23, primary deficit existed for nearly 80 percent of the sample years, whereas fiscal deficit was 5 percent or less for only eight years (Figure 6.6).

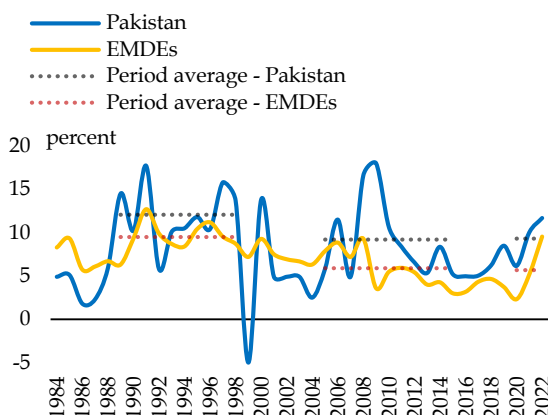
Likewise, monetary expansion, appears to be a common factor. Monetary overhang,<sup>2</sup>

**Food Inflation**



Source: Ha, J. et al. (2023)

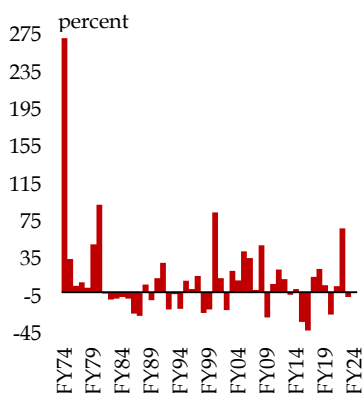
**Figure 6.4 a Energy Inflation**



**Figure 6.4 b**

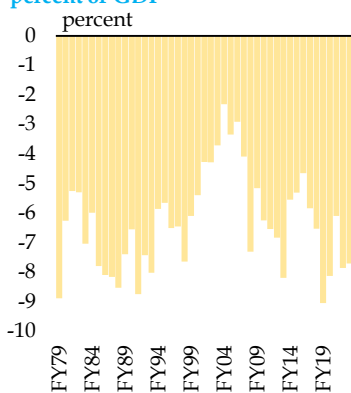
<sup>2</sup> The term monetary overhang refers to a situation of excess money supply relative to nominal GDP. Source: Moinuddin (2010)

**Change in Global Oil Prices - YoY** Figure 6.5 a



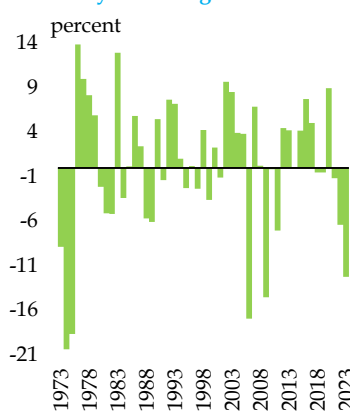
Source: Haver Analytics

**Fiscal Balance as percent of GDP** Figure 6.5 b



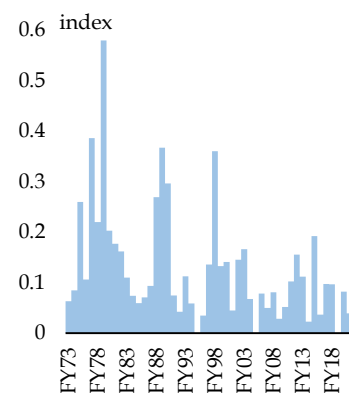
Source: State Bank of Pakistan

**Monetary Overhang** Figure 6.5 c



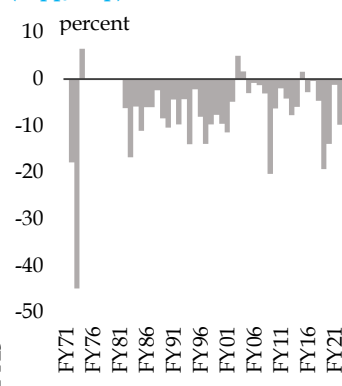
Source: SBP Staff Calculations

**Uncertainty Index - Pakistan** Figure 6.5 d



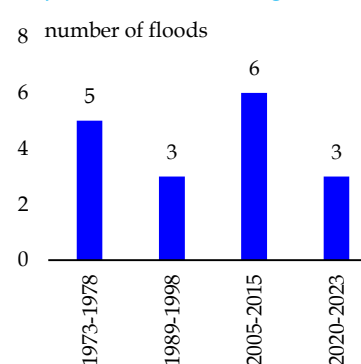
Source: Haver Analytics

**Exchange Rate (+app/-dep)** Figure 6.5 e



Source: State Bank of Pakistan

**Major Flood Events** Figure 6.5 f



Source: Federal Flood Commission of Pakistan - Annual Report 2021, Table 3.2 and UNOCHA

which typically drives inflation with a lag (Ahmad et al. 2016), was prominent in the immediately preceding years of three of the four identified high inflationary episodes (Figure 6.5c).

Uncertainty, which plays a strong role in driving inflation expectations and thus inflation, has also been relatively high in three of the four episodes and witnessed an increase in two of them. (Figure 6.5d)<sup>3</sup> Exchange rate adjustments, on the other

hand, has been a consistent factor in each of the high inflationary episodes (Figure 6.5e).

Similarly, while floods are not empirically estimated to be significant drivers of domestic inflation, each of the four identified inflationary episodes have witnessed a few major floods during the period along with several smaller floods (Figure 6.5f). For example, there were 3 major floods during the 1989-1998 episode

<sup>3</sup> The figure is based on World Uncertainty Index data that captures near and long term economic and political uncertainty.

and 6 during 2005-2015, as categorized by the Federal Flood Commission. However, there were five additional floods in each of these episodes.<sup>4</sup>

Although the impact of these floods is estimated to be short lived, especially considering that post-flood crop output is often higher due to diluvial soil enrichment, floods are found to have contributed to inflation during the years of its occurrence. For instance, severe floods in 1973 squeezed food supplies in Pakistan, with an estimated 3.6 million acres of agricultural land totally or partially damaged. This contributed to 30 percent food inflation in Pakistan during 1973, compared to an average 14.7 percent in EMDEs.<sup>5</sup>

In this backdrop, Section 6.2 sheds light on key macroeconomic determinants of inflation in Pakistan. Section 6.3 discusses broad policy issues and structural

challenges faced by Pakistan’s economy that impact some of the key determinants discussed in Section 6.2, and eventually manifest in inflation outcomes. Finally, Section 6.4 offers concluding remarks underscoring the importance of monetary policy to contain demand pressures and prevent de-anchoring of inflation expectations, and the need to resolve structural challenges, besides implementing appropriate macroeconomic policies, to achieve low and stable inflation over the medium to long-term.

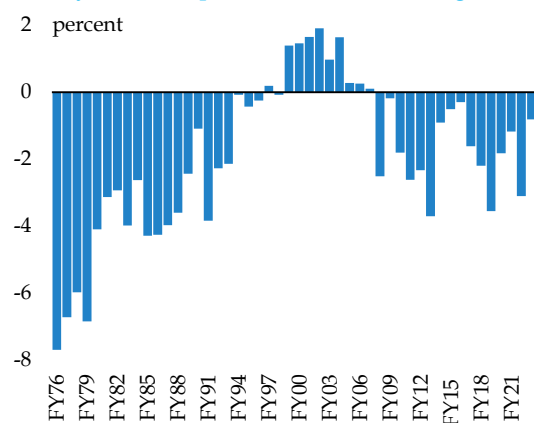
## 6.2 Determinants of Inflation in Pakistan

This section first takes stock of the existing literature on key determinants of inflation in Pakistan, including the impact of global commodity prices, money supply, fiscal deficit, uncertainty and inflation expectations.<sup>6</sup> The estimated impact of the determinants in these studies vary in their intensity and duration, as well as in the time they take to manifest on headline inflation numbers. The impact varies on account of, inter alia, differences in estimation techniques, data used, and the time period under study. The second part of this section draws from the latest SBP staff estimates to shed light on the determinants of the ongoing inflationary episode and the one between 2005-2015.

### Findings of Earlier Studies

From the perspective of overall demand-supply shocks, Khan and Hanif (2012) find

**Primary Balance as percent of GDP** Figure 6.6



Source: State Bank of Pakistan

<sup>4</sup> Hussain, F. et al. (forthcoming); World Bank (2020)

<sup>5</sup> SBP (1974), SBP (2011); Talpur, Z. et al. (2020); Hussain, F. et al. (forthcoming)

<sup>6</sup> There are several other determinants of inflation, for e.g. wage growth and wheat support price. However, due to paucity of space this review focuses on major determinants common to most studies on inflation in Pakistan.

that between 1992 and 2011, supply shocks accounted for 48 percent of the changes in inflation. By comparison nominal demand shocks (monetary) and real demand shocks accounted for 42 percent and 10 percent of variation in inflation, respectively. The paper also finds that the full impact of supply shocks linger for much longer as its manifestation on inflation is slower than demand shocks. Specifically, the study estimates that 75 percent of long-term impact of supply shocks on inflation appears during the 12 months of the shock. It reaches to 85 percent in 18 months and comes to an end in 36 months. By comparison, 90 percent of the nominal and real demand shocks are realized within 12 months; the former reaches to 95 percent in 18 months and the latter dies out in 24 months.

### *Global Commodity Prices*

Within supply shocks, domestic price levels have been found to be significantly driven by prices of global commodities, particularly of oil, which is a significant component of the global commodity price index.<sup>7</sup> Literature suggests that world oil prices affect the prices of several agricultural commodities, particularly those that are inputs to alternative fuel sources, such as corn and palm oil. In line with global literature, Hesary et al. (2018) found a positive correlation between energy prices and food prices in several Asian economies, including Pakistan, over

the period 2000–2016, on account of the direct impact of oil prices on the cost of production of agricultural commodities and food products, such as fuel in tractors, fertilizers, storage and distribution.<sup>8</sup>

Of all the tracked global commodities, domestic inflation is found to be most responsive to global crude oil prices, followed by global food, cotton and metal prices (Hanif et al. 2017). Moreover, contrary to the widely held belief that food and energy prices are primarily affected by such shocks, core inflation also responds to shocks in global food and crude oil prices. Core inflation in Pakistan shows a relatively gradual response to these shocks compared to food and energy prices, emphasizing the importance of the second-round effects.<sup>9</sup>

Hanif et al. (2017) also find that the transmission of the impact of global oil price increase is quicker compared to that of global food, cotton and metal as well as the impact of growth in money supply. This finding is corroborated by Hanif et al. (2022), which reveals that growth in global commodity prices determined inflation in both medium and long-run during the period 1992-2021.

However, research also reveals that not all types of global oil price shocks impact inflation in Pakistan. Based on sample period of 2002-2021, Sardar and Hyder (2022) find that compared to global oil supply shocks, global oil demand shocks

<sup>7</sup>As per World Bank's pink sheet, the Global Commodity Price Index (GCPI) has two components- energy and non-energy indices. Energy indices constitute 66 percent to the GCPI. Within the energy indices, the weight of oil is approximately 85 percent.

<sup>8</sup>Nazlioglu, S. & Soytaş, U. (2011); Harri, A. et al. (2009)

<sup>9</sup>See also Box 3.1 in Chapter 3 on "Understanding Second-Round Effects of Shocks to Food and Energy Prices"

have a more pronounced impact on domestic inflation. This distinction arises due to perception of policymakers in Pakistan that oil price increases driven by changes in global demand is a long-term phenomenon. As a result, administrative prices of domestic fuel are adjusted accordingly. In contrast, oil price increases driven by unforeseen shifts in global crude oil production are viewed as transitory in nature. The paper finds that the degree of the second-round impacts of oil demand and oil supply shocks varies accordingly.

#### *Exchange rate*

Recent empirical research, Hyder and Hussain (2019), suggest that the real effective exchange rate in Pakistan depreciates in response to increases in global oil prices, even when they are in the process of recovering from an immense fall in the preceding period. However, the impact of exchange rate depreciation itself on headline inflation is not particularly clear. A survey of firms suggests that exchange rate depreciation influences price-setting behavior of firms, more than even the strength of domestic demand, rising financing costs, and weakening of labor productivity (Khan, 2015). This is corroborated in Hanif et al. (2022) who find that the exchange rate played a significant role in explaining inflation, especially during short to medium-term.

However, most other prior studies show that pass-through<sup>10</sup> of exchange rate depreciation is either low or unconvincingly established. For instance,

Siddiqui and Akhtar (1999) do not find any significant relationship between changes in the exchange rate and domestic prices during 1972-1998. Another study by Sattar et al. (2012) finds no long run relationship between the exchange rate and inflation during the period 1980-2009. Similarly, Hyder and Shah (2004) also find that exchange rate pass-through was low on consumer price inflation between 1988-2003, although it is estimated to have a stronger impact on wholesale price index (WPI), particularly its fuel and lighting and manufacturers baskets.

Hyder et al. (2006) finds some pass-through of exchange rate depreciation on domestic prices in the years 1977-2005, but the pass-through effect is not precisely determined and thus statistically insignificant. This echoes the finding of Choudhri and Khan (2002) that Consumer Price Index's response to exchange rate shocks was close to zero for up to 10 quarters during the period 1982-2001.

These findings seem contrary to popular opinion as exchange rate depreciation influences prices through both direct and indirect channels, such as price of both imported finished goods and raw materials for domestic production. However, there are two plausible reasons why most earlier research on the impact of exchange rate depreciation on inflation has found little to no impact: (a) earlier studies have not conducted episode wise analyses, which means impact, if any, of one-time adjustment may have been diluted over long sample periods; and (b) the data

<sup>10</sup> Pass through is the degree to which a given absolute change in one variable causes an absolute change in other variable

analysed in these studies are mostly before Pakistan transitioned to a flexible exchange rate in July 2000, and market-based exchange rate in May 2019.<sup>11</sup>

### *Money Supply and Fiscal Stance*

Most previous empirical research suggests that inflation in Pakistan has been significantly a monetary phenomenon. For instance, in their study of the period 1971-2012, Ahmed (2013), and Ahmed et al. (2014) find that broad money (M2) has a positive long run association with inflation. Similar association is shown in Hanif (2014) using data from the period 1951-2010 and Hanif et al. (2022). This finding is also corroborated by Nguyen (2015) covering the period of 1985-2012 on some selected Asian economies, including Pakistan.

At the same time, empirical evidence suggests that fiscal stance has also been a key determinant of inflation in Pakistan. Tariq et al. (2012), in their study for the period 1972-2009, observe that domestic debt and domestic debt servicing has an impact on price levels in Pakistan. The study highlights that government borrowing from the central bank increases the money supply thereby increases the price level.

Haider and Khan (2007), covering the period 1992-2007, also conclude that government borrowing has a significant positive impact on domestic inflation. Recent evidence echoes these findings.

Raza and Mughal (2022) find both budget deficit and money supply to be significantly positively related to inflation. Using data from 2000 to 2019, the study also finds that other fiscal variables like total taxes, indirect taxes and sales taxes have a positive impact on inflation. Hanif et al. (2022) also show that government borrowing has a significant impact on inflation both in the short run as well as in long run.

### *Inflation expectations*

The relevance of inflation expectations has increased in recent years. These are influenced by many factors, including global commodity price outlook, fuel and energy price adjustments, and recent inflation trends, especially if they persist for an extended period. In addition, while exchange rate depreciation has been found to be a significant contributor to inflationary expectations in both AEs and EMDEs, the lack of exchange rate flexibility in some EMDEs can also increase the magnitude of external shocks, which in turn contributes to de-anchoring of inflationary expectations. Moreover, higher public debt is associated with expectations of higher inflation, especially if the stock of public debt is held in foreign currency, and exacerbated when fiscal deficits are persistent (see **Section 6.4**).<sup>12</sup>

In Pakistan, research on the impact of inflation expectation on inflation outturns is limited, and have mostly used lagged values of various inflation indicators as a

<sup>11</sup> SBP (2020)<sup>b</sup>

<sup>12</sup> Albrizio, S. et al. (2023); Moessner, R. (2022); Beckmann, J. et al. (2022); Ali, M. G. et al. (2015); IMF (2023); J. Ha, et al. (2019); Koç, U. et al. (2021); Patra, M.D. & Ray, P. (2010)

proxy. For instance, Pasha et al. (1995) have found inflationary expectations, measured by lagged values of WPI, to have had a pronounced effect on food inflation during the 1990s, which in turn impacted headline numbers given its large share in the consumer basket.

Likewise, Abdullah and Kalim (2012) have used lagged values of food price index to proxy inflationary expectations for the period between 1972-2008 that show a statistically significant impact on food inflation. Khan et al. (2007) find that adaptive expectations<sup>13</sup> – measured as a lagged values of CPI inflation – significantly contributed to inflation during 2004 to 2006. Moreover, Ali et al. (2015) have also found adaptive expectations – measured as lags of Non-Food Non-Energy – to be the largest contributor to core inflation between 1985 and 2005, especially in times of high level of political and economic uncertainty.

In terms of triggers of inflation expectations, Abbas et al. (2015) find fuel and energy prices to have influenced inflationary expectations in Pakistan. This is in line with global findings that the immediate pass-through of global oil prices on domestic consumer prices is due to inflationary expectation of economic agents, whereas the increase in marginal costs and consumer prices takes time.<sup>14</sup> Similarly, Khaliq (2023) find food price shocks to have significant impact on consumer inflation expectation in Pakistan between 2009 and 2022.

Empirical studies on the impact of exchange rate depreciation on inflationary expectations are scant. However, Khalid (2015) argue that the PKR-USD parity is seen as an anchor for consumer inflationary expectations and overall business sentiments (**Figure 6.7a & 6.7b**). Moreover, Abbas et al. (2015) find inflationary expectations to be exaggerated and more entrenched among low-income, less educated, female and younger respondents, which given Pakistan's population structure<sup>15</sup> contributes to inflationary pressures in the country. This is in line with Conrad et al. (2021), which shows that inflation expectations globally are also shaped by experiences and socio-economic background of individuals and businesses.

### *Uncertainty*

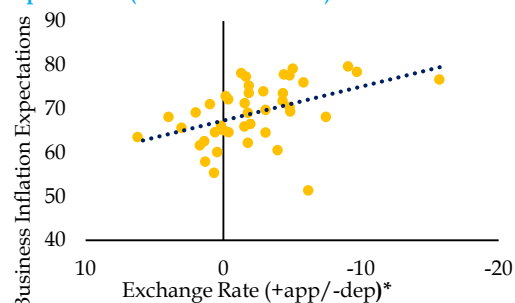
In recent years, uncertainty is increasingly understood as a major contributor to inflation. Chaudhry and Abe (1999) suggest that uncertainty of economic policies affect investment, consumption and production decisions, of businesses and households, leading to a situation in which inflation, fiscal deficit and public debt reinforce each other in a vicious cycle. Aisen and Veiga (2006) find that political instability, emerging from various factors, such as frequent cabinet changes and government crises, is strongly associated with higher inflation. This is because during times of political uncertainty the objective of price stability is often compromised. The impact of political

<sup>13</sup> Adaptive expectations are backward looking as future prices are predicted based on past events.

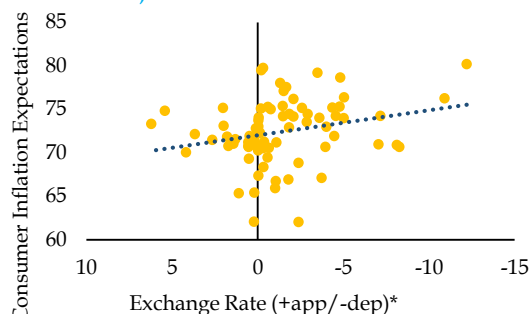
<sup>14</sup> Bernanke, B. (2013)

<sup>15</sup> 67 percent of Pakistan's population is less than or equal to 30 years of age; 49 percent population is female, whereas adult literacy rate is 58 percent. SBP (2022) <sup>b</sup>

**Interaction Between Exchange Rate (+app/-dep) and Business Inflation Expectations (Dec 2017 - Dec 2023)**



**Figure 6.7 a** **Interaction Between Exchange rate (+app/-dep) and Consumer Inflation Expectations (Mar 2012 - Dec 2023)**



Note: BCS conducted since Oct 2017 while CCS conducted since Jan 2012. \* Exchange rate (+app/-dep) calculated for periods between surveys

Source: State Bank of Pakistan

instability on inflation is more pronounced in high inflation countries, and in developing countries.

Moreover, Kazakis (2023) show that uncertainty is also associated with concentration of market power, ultimately resulting into higher inflation. Uncertainty impacts firms' decision-making on whether to enter a market or sector. This protects the established firms in the market or sector from competition, thus increasing their market power. Uncertainty also exacerbates information asymmetry, and firms with more information or resources, such as already well-established firms, exploit this advantage and strengthen their position.

Most empirical literature on determinants of inflation in Pakistan does not consider the impact of economic and political

uncertainty. One exception is Khan and Saqib (2009) that investigates the relation between political instability and inflation. The study, using three different variables for political instability (polity, cabinet changes and government crises) for the period 1951-2007, finds a high positive relation between political instability and inflation.

#### **SBP Staff Estimates<sup>16</sup>**

The foregoing literature review brings to fore three important gaps in existing research on the determinants of inflation in Pakistan. First, earlier studies have not solely focused on the high inflationary episodes as identified in Section 6.1. Second, the time period covered in most earlier studies is somewhat dated. Third, the list of determinants in most earlier studies has been somewhat limited,

<sup>16</sup> This sub-section discusses the key findings of Hussain, F. et al. (forthcoming) as shown in Table 6.1, Figure 6.8 and Figure 6.9. For insights into annual contribution of key determinants, Figure 6.8 serves as a point of reference, whereas their contribution to monthly inflation shocks are shown in Figure 6.9. The cumulative impact or pass-through of one percent (or one standard deviation) shock to each determinant on inflation are mentioned in Table 6.1. In the interest of clarity, this note serves as a blanket reference for the graphs and tables cited herein.

preventing a systematic analysis of drivers of inflation when several factors are simultaneously at play. The SBP staff, Hussain et al. (forthcoming), addresses these gaps by estimating the contribution of a wide range of determinants on a monthly basis, and thereby closely analyse the ongoing high inflationary episode of 2020 to H1-FY24, and nearly all years of the previous episode (2005-2015).

In addition, the study uses previously unexplored proxies for five key determinants to help toward cleaner identification of their impact on inflation. First, as a point of departure from the earlier papers, the study separates the impact of money supply from fiscal expansion. Second, unlike other indicators

of fiscal policy, the study uses a proxy that offers a better handle on the analysis of determinants of inflation at high frequency.

Third, for inflation expectations, the study uses data from the SBP's Consumer Confidence Survey instead of the lagged values of inflation indicators used in most earlier papers. Fourth, it uses a high frequency indicator of political and economic uncertainty, which has been a relatively unexplored dimension in previous studies. Lastly, it assesses the impact of floods/droughts on prices. While the construction of these variables and estimation methodology is explained in **Box 6.2**,<sup>17</sup> the key findings of the study are discussed below.

#### Box 6.2: Estimation Methodology

The study first identifies the main drivers of inflation in Pakistan. To this end, several domestic and external factors are considered as potential determinants of domestic inflation, followed by estimates of how shocks to each determinant impacts inflation individually. It then examines the role of various determinants on inflation, alongside quantification of their relative contribution over the sample period. Both these exercises are based on monthly data from June 2002 to December 2023.

##### a. Structural Vector Autoregression (SVAR) model

The authors use SVAR model to estimate the cumulative response (pass-through) of shock to each of the drivers on inflation. To identify structural shocks, the study follows recursive ordering, as suggested by McCarthy (1999), for generating impulse responses and estimating cumulative pass-through coefficients. The determinants, as proxied by respective variables, included in the analysis are ordered according to their relative degree of exogeneity i. e. most exogenous determinant comes first while most endogenous determinant (inflation) is placed at the last. Accordingly, their ordering is as follows:

Floods, global commodity prices, uncertainty, output gap, money supply, fiscal policy stance, exchange rate, inflation expectations and input costs, with CPI being the most endogenous in the system. The (SVAR) framework can be presented as under.

$$y_t = C + A(L)y_t + u_t \quad (1)$$

Where  $y_t$ ,  $C$ ,  $u_t$  and  $A(L)$  are vector of endogenous variables, matrix of constants, vectors of innovations and polynomial of lag operators, respectively. The study finds each of the variable a significant contributor to inflation during the period.

<sup>17</sup> Arby, M.F. & Ghauri, S.P. (2016) find that WPI food index can be a predictor of CPI food index, and that both CPI and WPI can impact each other. However, the study did not estimate WPI's impact on inflation in a multi-variable model.

**b. Estimates of relative contribution of determinants to inflation**

The estimation of period-wise relative contribution of shocks to various drivers on overall inflation by employing Historical Decomposition approach. This technique, developed by Burbidge and Harrison (1985), explains the path of endogenous variable(s) over the sample period in terms of innovations (shocks) in all the variables, included in the system. After simple algebraic manipulation, equation (1) can be written as:

$$y_T = A^T y_0 + \sum_{k=1}^T A^{T-k} u_t \quad (2)$$

Where first term on the right hand side of the equation,  $y_0$ , is initial value of the concerned variable, while second term represents the cumulative sum of all structural shocks. Equation (2) represents historical decomposition, where actual data at period  $t$  is expressed as the sum of base projection and weighted structural innovations to all endogenous variables in the system.

**c. Data**

The study uses the following variables as a proxy for the various determinants of inflation:

- i) **Floods/Drought:** In the absence of high frequency data on floods/drought, the study measures floods/drought as deviation of rainfall in a certain month from the average of that month over the sample period.
- ii) **Global commodity prices:** Commodity prices contribute to inflation via higher prices of imported inputs and consumption goods. World Bank’s Global Commodity Price Index is used to capture both the impact of oil prices as well as prices of other imported commodities, especially food items.
- iii) **Uncertainty:** To capture the impact of uncertainty, the study uses the spread between short-term and long-term secondary market interest rates in consideration of the view that the slope of yield curve is often considered as a degree of confidence on future path of the economy, incorporating the impact of both political and economic uncertainty.<sup>a</sup> Short-term interest rates are generally sensitive to uncertainty but have relatively lower noise compared to other proxies for uncertainty. For instance, while the stock market volatility is often used as a proxy for uncertainty, it does not offer a true reflection in shallow and undeveloped markets, such as Pakistan’s. Likewise, Economic Policy Uncertainty Index, based on Economic Intelligence Unit’s country reports, is not a suitable proxy for uncertainty as the data for the variable is not available on monthly basis, whereas Credit Default Swaps is found to have spurious correlation in Pakistan, especially considering that it may also reflect the impact of external vulnerabilities that is better proxied by exchange rate. Lastly, data for government crisis, polity and cabinet changes only measures political uncertainty and is not available on annual basis.
- iv) **Money supply:** M3 is used as a measure of money supply, excluding government’s budgetary borrowing.<sup>b</sup> The budgetary borrowing is subtracted in order to see the impact of money supply without the influence of the fiscal policy stance.
- v) **Fiscal policy stance:** The study uses the ratio of government borrowing to FBR taxes to capture the fiscal stance. Increase in this ratio indicates expansionary fiscal policy stance and vice versa. This proxy offers a better handle on the analysis of determinants of inflation at high frequency as data for fiscal deficit is not available on a monthly basis.
- vi) **Inflation expectations:** Inflation expectation index is constructed using data on consumer inflation expectation as tracked by the SBP’s Consumer Confidence Survey (CCS). Since the CCS data is available on bi-monthly basis from 2012, the missing data was calculated as the average of the adjacent months, whereas the data for the period 2002 to 2012 has been backcasted.
- vii) **Input cost (WPI):** Wholesale price index is used to capture the impact of changes in input cost, which is a useful indicator for cost-push inflation.

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- viii) **Exchange rate:** Changes in the value of PKR per USD is used to capture the effects of currency depreciation/appreciation on inflation.
- ix) **Output gap:** In the absence of monthly aggregate demand data, the difference between the cyclical and permanent components of LSM index is used as a proxy for output gap (or excess demand).

<sup>a</sup> Cuadra, G. & Sapriza, H. (2008)

<sup>b</sup> The results are not different from that of M2. M3 includes notes in circulation, transferable deposits, other deposits, securities other than shares, coins in circulation, deposits held with Non-Bank Financial Companies (NBFCs), National Saving Schemes - outstanding amount (Central Directorate of National Savings-CDNS) and deposits held with post offices.

With the exception of some years, shocks to money supply and fiscal policy stance have significantly contributed to inflation between FY06 and H1-FY24. Specifically, a one percent shock to money supply has a pass-through impact of 0.21 percent to inflation in the ensuing twelve months, whereas the same size of shock to fiscal policy stance has a pass-through impact of 0.01 percent in the twelfth month (Table 6.1). Despite this difference in pass-through impact, fiscal policy is one of the two major drivers of inflation common to both the ongoing and the previous episode of high inflation, implying that fiscal shocks are frequent and their size is

substantially larger than money supply shocks (Figure 6.8 & 6.9).

The next major contributor to inflation common to both the ongoing episode and the previous episodes is uncertainty, reflecting the country’s checkered political and economic environment. The change in global commodity prices also has had a positive and significant impact on inflation between FY06 and H1-FY24. However, its impact on inflation waxes and wanes tracking the movements in global prices. Moreover, the cumulative pass-through of global commodity price hikes on inflation is found to be marginally positive in the

**Cumulative Pass-through Impact of Key Determinants\***

**Table 6.1**

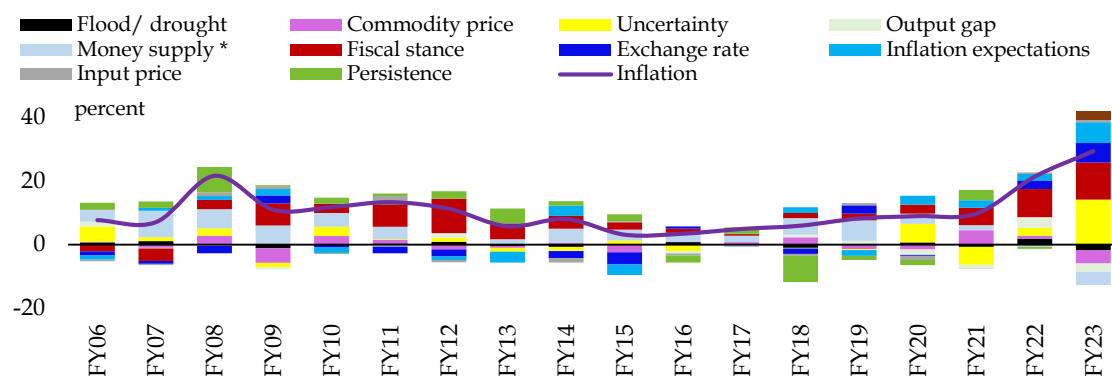
| Period | Flood | Commodity Prices | Uncertainty | Output Gap | Money Supply | Fiscal Stance | Exchange Rate | Inflation Expectations | Input Price |
|--------|-------|------------------|-------------|------------|--------------|---------------|---------------|------------------------|-------------|
| 1      | 0.00  | 0.05             | 0.00        | 0.04       | -0.03        | 0.00          | -0.06         | 0.02                   | 0.10        |
| 2      | 0.01  | 0.02             | 0.00        | 0.03       | 0.01         | 0.01          | -0.02         | 0.11                   | 0.12        |
| 3      | 0.04  | 0.06             | 0.00        | 0.02       | 0.00         | 0.01          | 0.09          | 0.23                   | 0.17        |
| 4      | 0.01  | 0.08             | 0.00        | 0.00       | -0.01        | 0.01          | 0.14          | 0.37                   | 0.28        |
| 5      | 0.01  | 0.05             | 0.01        | 0.03       | 0.04         | 0.00          | 0.30          | 0.44                   | 0.25        |
| 6      | 0.01  | 0.04             | 0.01        | 0.02       | 0.11         | 0.01          | 0.41          | 0.48                   | 0.25        |
| 7      | 0.01  | 0.06             | 0.01        | 0.02       | 0.15         | 0.01          | 0.30          | 0.18                   | 0.28        |
| 8      | 0.01  | 0.05             | 0.01        | 0.01       | 0.15         | 0.01          | 0.34          | 0.23                   | 0.22        |
| 9      | 0.03  | 0.05             | 0.02        | 0.00       | 0.17         | 0.01          | 0.30          | 0.22                   | 0.14        |
| 10     | 0.02  | 0.05             | 0.02        | 0.01       | 0.17         | 0.01          | 0.28          | 0.28                   | 0.17        |
| 11     | 0.02  | 0.08             | 0.02        | 0.01       | 0.21         | 0.01          | 0.32          | 0.30                   | 0.21        |
| 12     | 0.02  | 0.08             | 0.02        | 0.03       | 0.21         | 0.01          | 0.30          | 0.30                   | 0.17        |

\* This table shows cumulative impact of one percent shock to each variable on inflation over a span of 12 months. Based on SVAR Model; the variables are enlisted in this table according to their relative degree of exogeneity; see Box 6.2

Source: Hussain, F. et al. (forthcoming)

Contribution in Average Actual Inflation

Figure 6.8



Note: Based on historical decomposition; see Box 6.2.

\*Money supply (M3) excluding government

Source: State Bank of Pakistan

initial months (Table 6.1), which may be attributed to implicit and explicit subsidies on oil prices – that dominate the global commodity index.<sup>18</sup>

The results indicate that expectations about prices have highest cumulative pass-through to inflation. In particular, the pass-through of one percent shock to inflation expectations peaks (0.48 percent) in six months from its occurrence. The study also finds exchange rate depreciation to be a significant determinant of inflation. The cumulative pass-through impact of one percent shock to exchange rate peaks during the first six months (0.41 percent) and gradually decreases to 0.30 percent in the 12<sup>th</sup> month (Table 6.1).

The study also finds that the pass-through of floods peaks in third month, after which it tapers off. Accordingly, the floods in both 2010 and 2022 impacted inflation in the first few months after the impact. However, the impact was short-lived; it faded away after 3-4 months, and was not pronounced in annual estimates. This is in

line with findings of Parker (2016) on impact of natural disasters on inflation, which suggest that unlike drought the impact of storm dissipates after a few months leaving no significant impact after a year.

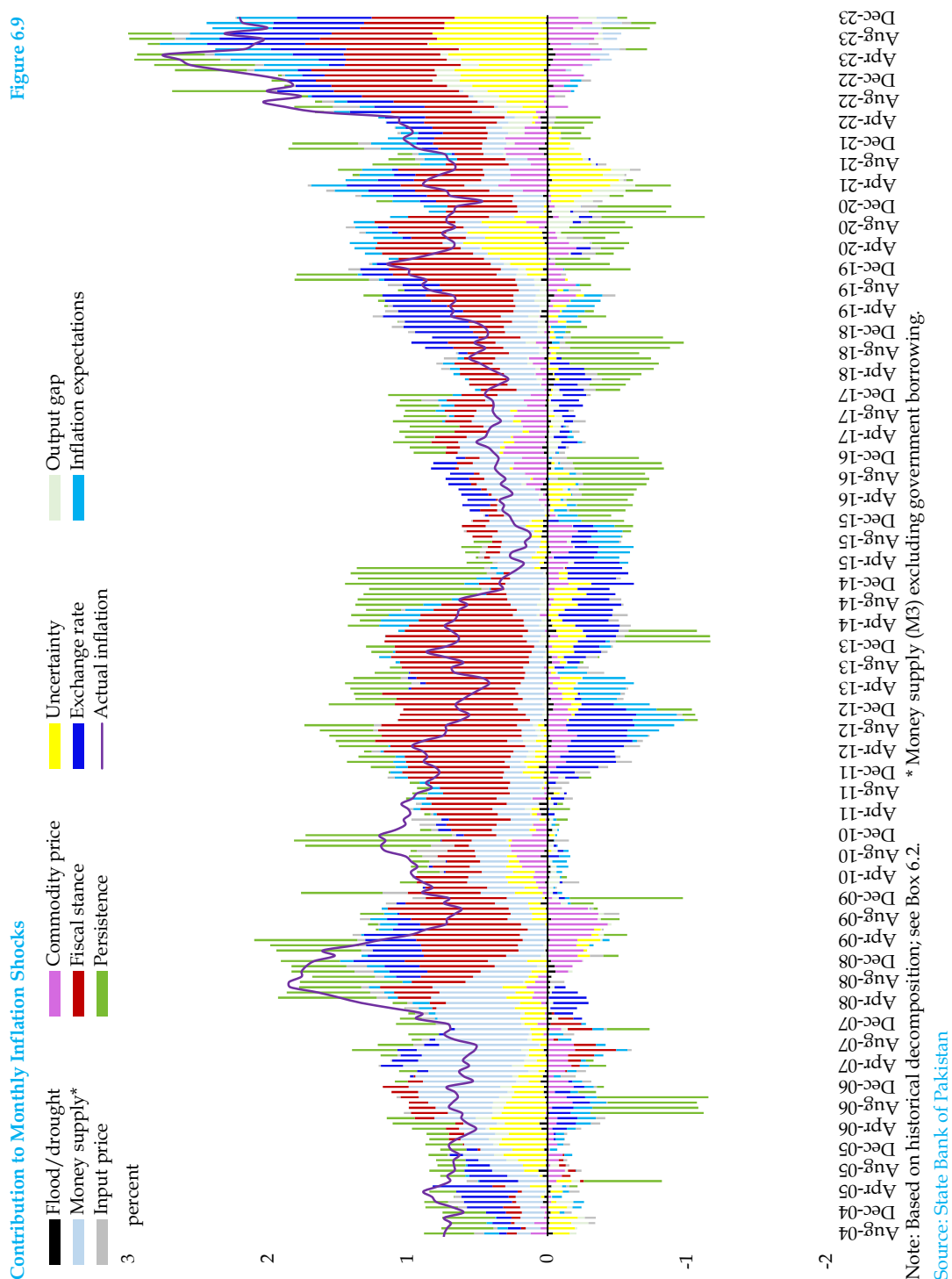
#### FY05-FY15 episode

The FY05-FY15 high inflationary episode can be viewed in two phases: pre and post Global Financial Crises (GFC) of 2007-08. Pre-GFC money supply and uncertainty were the major contributors to inflation. The former reflects the impact of high growth in private sector credit and foreign inflows. The latter reflected the growing political uncertainty in the years leading up to the GFC, and the change of government in 2008.

In the post GFC phase, fiscal policy contributed the most to inflation, reflecting high government borrowing during the period amid increased public sector development spending. The contribution of the exchange rate was most visible after

<sup>18</sup> Similar results have been found for Sri Lanka and South Africa. Source: Duma, N. (2008); Bhundia, A. (2002)

Figure 6.9



the post-GFC currency adjustment in FY09 amid external account vulnerabilities. However, following the resumption of IMF program and ensuing stabilization, exchange rate stabilized, and accordingly its contribution to inflation turned negative.

In both phases, the estimated contribution of global commodities was significant in the wake of rising commodity prices leading up to the GFC, and the rebound in prices after the GFC-led crash. Input prices, as measured by WPI, reflected in part the rise in global commodity prices and its contribution to inflation during the period.

#### *Ongoing episode FY20 to H1-FY24*

Unlike the previous episode, money supply (excluding budgetary borrowings) has not been a major contributor to inflation in the ongoing episode, even though its contribution was noticeable in FY18 and FY19. During the peak pandemic years FY20-21, its contribution to inflation decreased compared to the preceding two years, despite growth in private sector credit amid monetary easing. Following the reversal of monetary policy easing and continuous tightening since FY22, the estimated contribution of money supply (excluding budgetary borrowings) to inflation has turned negative.

Instead, the prominent driver of inflation during the ongoing episode has been fiscal policy, particularly after FY21 amid high fiscal deficits. Uncertainty emerged as the second largest contributor during the

current inflationary episode. While the uncertainty in FY20 may be attributed to the onset of Covid-19, that during FY22 and onward reflects heightened political and economic uncertainty in the period leading up to the General Elections of 2024.

Inflation expectations and exchange rate depreciation have also contributed significantly. In light of the literature discussed in the preceding sub-section, the former may be attributed to exchange rate depreciation, and the consistent rise in global commodity prices until the first half of FY23. The estimated contribution of commodity prices on monthly and annual inflation spiked following the post-pandemic global price hike and the onset of the Russia-Ukraine conflict in FY21 and FY22 respectively. But its impact waned following the softening of the commodity prices, particularly visible from the second half of FY23 till December 2023.

### 6.3 Policy and Structural Challenges

The degree to which key macroeconomic determinants, such as those discussed in the preceding section, impact inflation can vary across time and space, depending on the differences in long term structural factors. These factors include economic structure, policy and institutional environment, and other country characteristics.<sup>19</sup>

Compared to key macroeconomic determinants of inflation, the impact of the structural factors are typically slow

<sup>19</sup> Campillo, M. & Miron, J. A. (1997); J. Ha, et al. (2019)

moving,<sup>20</sup> and can even take decades to create and strengthen underlying inflationary or disinflationary conditions. For instance, global research suggests that improvements in structural factors – including trade openness, central bank autonomy, fiscal reforms, productivity, and demographic ratios – have resulted in reducing inflationary pressures in both AEs and EMDEs over the past few decades.<sup>21</sup>

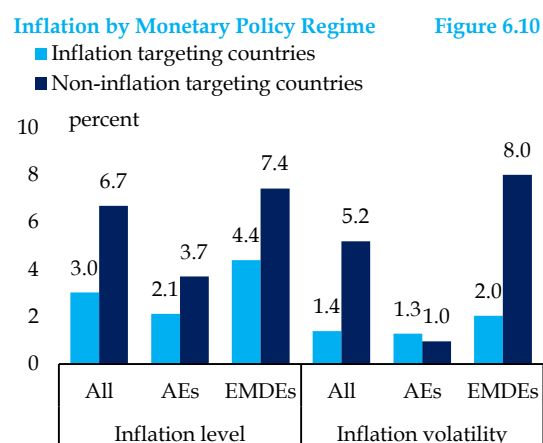
However, despite the consensus on their importance, quantification of the impact of structural factors remains a challenge, particularly in LMICs. This is mainly due to the slow moving nature of these variables; lack of standardized metrics and relevant historical data; rapid structural changes in different economic sectors; gaps in the knowledge of underlying structural forces; and a shortage of research expertise.<sup>22</sup>

Understandably, no study to date has conducted an econometric analysis of a comprehensive set of structural factors, influencing inflation in Pakistan. In recognition of this gap, the ensuing discussion sheds light on some of the key policy and structural factors, and other country specific characteristics relevant to Pakistan that seem to be impediments to achieving and maintaining low and stable inflation over long-term horizon.<sup>23</sup>

### Monetary Policy Framework

Inflationary expectations have emerged as a challenge in Pakistan in recent years, as highlighted in the preceding section. Amongst other things, this necessitates strengthening of central bank credibility and autonomy, and adopting a clearly defined monetary policy strategy, particularly the inflation targeting regime that helps check both inflation and its volatility (Figure 6.10).<sup>24</sup>

The SBP has been undergoing a transition over the last two decades, the most important of which include the abandoning of monetary target regimes; the introduction of an interest rate corridor; and a transition to a market based exchange rate (Figure 6.11). However, it is the legal amendment in 2022 that has helped the central bank gain autonomy (Table 6.2). Following the amendment, the



Source: Ha, J. et al. (2019)

<sup>20</sup> Exceptions apply, such as the Covid-19 shock.

<sup>21</sup> Campillo, M. & Miron, J. A. (1997); J. Ha, et al. (2019)

<sup>22</sup> Campillo, M. & Miron, J. A. (1997); J. Ha, et al. (2019)

<sup>23</sup> A host of policy and structural factors may affect inflation. These include transportation, digitization, and corruption. However, the list of challenges discussed in this section is not intended to be exhaustive. It is an indicative list brought under spotlight to further public discourse, and quantitative research for estimation of their impact.

<sup>24</sup> Ha, J. et al. (2019); Youssef, H. A. G. (2007)

**Central Bank Independence Index** Table 6.2

| Country      | 2003  | 2013  | 2023  |
|--------------|-------|-------|-------|
| Brazil       | 0.494 | 0.494 | 0.686 |
| Thailand     | 0.033 | 0.216 | 0.216 |
| South Africa | 0.300 | 0.300 | 0.300 |
| Philippines  | 0.565 | 0.565 | 0.565 |
| Indonesia    | 0.887 | 0.887 | 0.887 |
| Romania      | 0.654 | 0.654 | 0.654 |
| Türkiye      | 0.838 | 0.838 | 0.757 |
| India        | 0.298 | 0.298 | 0.373 |
| Argentina    | 0.753 | 0.753 | 0.753 |
| Pakistan     | 0.262 | 0.356 | 0.799 |

Note: The index ranges from 0 to 1 where 0 corresponds to the lowest level of independence to 1, the highest level. The five broad categories upon which the index is calculated include: (1) provisions on the tenure of the central bank governor and board and the rules for their appointment and dismissal (20 weightage), (2) provisions on central bank fundamental objectives (15 weightage), (3) provisions on the formulation of monetary policy (15 weightage), (4) provisions on central bank lending to the government (40 weightage), and (5) accountability and transparency (10 weightage)

Source: Quality of Government Institute, University of Gothenburg, based on Jácome, L. I. and Vázquez, F. (2008). Available at: [https://datafinder.qog.gu.se/variable/cbie\\_cwne](https://datafinder.qog.gu.se/variable/cbie_cwne)

SBP prepared its Strategic Plan for 2023-28, under which the SBP plans to implement a

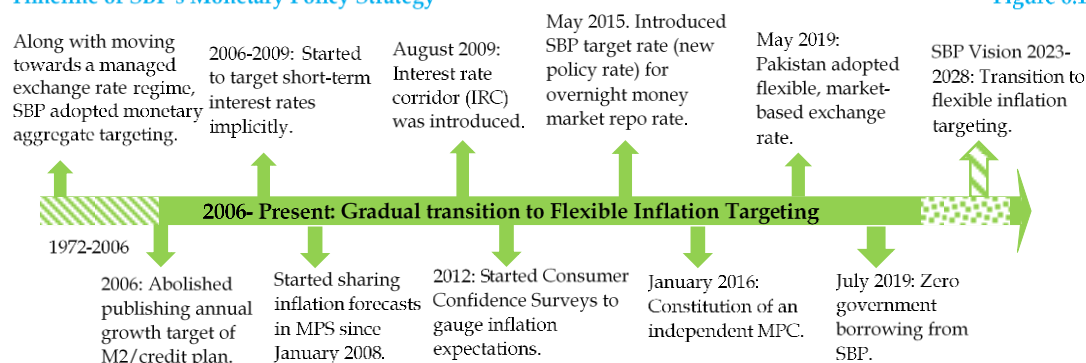
flexible inflation targeting regime by 2028 to further enhance the efficacy of monetary policy and better anchor inflationary expectations (Table 6.3).<sup>25</sup>

The latest amendment to the SBP Act in 2022 also spelled out a clear definition of the SBP's objectives, with price stability as its primary objective; the strengthening of its functional and administrative autonomy; and the abolishment of Monetary and Fiscal Policies Coordination Board because its terms of reference overlapped with that of the MPC.<sup>26</sup> In addition, the latest amendment has put an end to government borrowing from the SBP as well as the quasi-fiscal operations<sup>27</sup> given their inflationary implications.

### Fiscal and debt policy

Growing body of academic literature suggests that imprudent fiscal and debt policy plays an instrumental role in driving inflationary pressures. At the one

Timeline of SBP's Monetary Policy Strategy



Source: SBP website; Moiniddun (2007). Choice of Monetary Policy Regime: Should SBP Adopt Inflation Targeting, SBP Working Paper Series, Karachi: SBP; SBP Press Releases; SBP (2020).

<sup>25</sup> SBP (2023) c

<sup>26</sup> MoF (2021)

<sup>27</sup> Following the 2022 amendment to SBP Act 1956, existing quasi-fiscal operations are being phased out.

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**Adoption of Inflation Targeting Regime** **Table 6.3**

| Country        | Adoption Year |
|----------------|---------------|
| New Zealand    | 1990          |
| Canada         | 1991          |
| United Kingdom | 1992          |
| Australia      | 1993          |
| Finland        | 1993          |
| Sweden         | 1993          |
| Spain          | 1995          |
| Czech Republic | 1997          |
| Poland         | 1998          |
| Brazil         | 1999          |
| Poland         | 1999          |
| Thailand       | 2000          |
| South Africa   | 2000          |
| Philippines    | 2002          |
| Indonesia      | 2005          |
| Romania        | 2005          |
| Armenia        | 2006          |
| Türkiye        | 2006          |
| India          | 2016          |
| Argentina      | 2016          |
| Pakistan*      | In Transition |

Sources: Central Banks and IMF website; S. Mensi et al. (2023); S. K. Jafri et al. (2023).

end, government borrowing from the central bank leads to money printing. At the other end, the fiscal theory of price level (FTPL) informs that high government borrowing to finance fiscal deficits stokes inflation. Specifically, FTPL posits that borrowing through issuance of government bonds to banks and non-banks (such as households and firms) contributes to increase in demand pressures, if bondholders do not expect government debt to be paid or paid on time or otherwise expect its value to fall in the future, and therefore spend it on buying assets or goods and services to avoid loss of real value in the future. The absence of

fiscal consolidation also undermines the effectiveness of monetary policy when central banks try to contain inflation by raising interest rates.<sup>28</sup>

Moreover, high public debt to GDP has been found to have increased uncertainty and inflation expectations in EMDEs. It does so by weakening the perceptions of monetary policy credibility and independence. Studies also show that large external debt increases the economy's susceptibility to external shocks, which can cause exchange rate depreciation. In addition to increasing the domestic currency value of external debt, this raises inflationary expectations. Lastly, significant deviations – both in terms of magnitude and timing – from planned fiscal policies that impact price levels, such as indirect taxes or administrated prices, can elbow central banks to deviate from the inflation target. This in turn can affect monetary policy credibility and stoke long-term inflationary expectations.<sup>29</sup>

In light of literature, fiscal and debt policy seems to be a dominant driver of inflation in Pakistan, as also identified by econometric studies discussed in the preceding section. Budgetary borrowing from the central bank has been prominent in the past, and has been found to be the most inflationary source of deficit financing.<sup>30</sup>

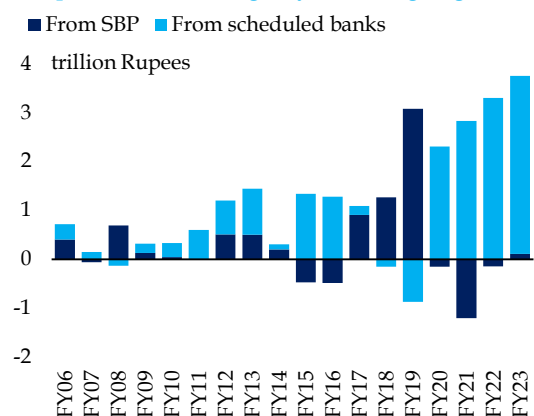
The most recent episode of deficit monetisation was between the years FY17 to FY19. (**Figure 6.12**). With the January

<sup>28</sup> Lubik, T.A. (2022); Fine, O. et al. (2022); Laurens, B. & Piedra, E.G. de la (1998); Leeper, E.M. (2023)

<sup>29</sup> IMF (2023); Harrison, O. et al. (2023); Jafri, S. K. et al. (2023)

<sup>30</sup> Ali, K. & Khalid, M. (2019); Sherani, S. (2006)

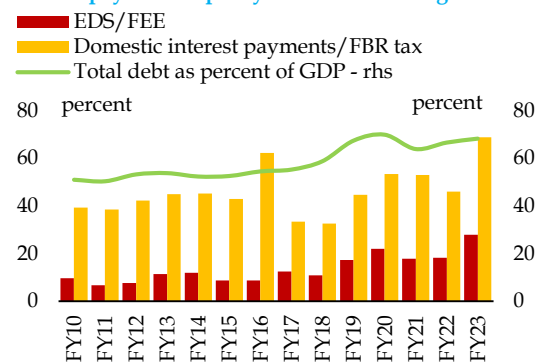
**Composition of Net Budgetary Borrowing** Figure 6.12



Source: State Bank of Pakistan

2022 amendment of the SBP Act, the government has relied on borrowing from scheduled banks, and non-bank sources. In light of FTPL and concerns over debt sustainability, this is likely to be contributing to demand pressures.

**Debt Repayment Capacity** Figure 6.13



Note: EDS stands for external debt servicing. FEE stands for FX earning.

Sources: Ministry of Finance and State Bank of Pakistan

High public debt may also have a bearing on uncertainty and inflation expectations. The total debt – as per the definition of Fiscal Responsibility and Debt Limitation Act 2005<sup>31</sup> - has been breaching the limit of 60 percent since FY19, and the debt repayment capacity has been gradually waning in recent years. (Figure 6.13). The latter is mainly on account of higher interest payments on external and domestic debt, and lower foreign exchange earnings and FBR tax revenues.

Moreover, over the last two decades, the government has increasingly relied on indirect taxes, such as sales tax and customs duties, and indirect collection mode of direct taxes, such as advance taxes and withholding taxes.<sup>32</sup> Both indirect taxes and indirect collection mode of direct taxes are found to be inflationary in nature given their cascading effect on prices.<sup>33</sup>

At the same time, untargeted subsidies (particularly energy subsidies), and government support to loss-making commercial state-owned enterprises adds to borrowing needs (Figure 6.14). Lastly, there have been frequent instances of discretion vis-à-vis the magnitude and timing of administered prices (POL products, and utilities tariffs), which in some years has also led to deviation from the planned fiscal consolidation.<sup>34</sup>

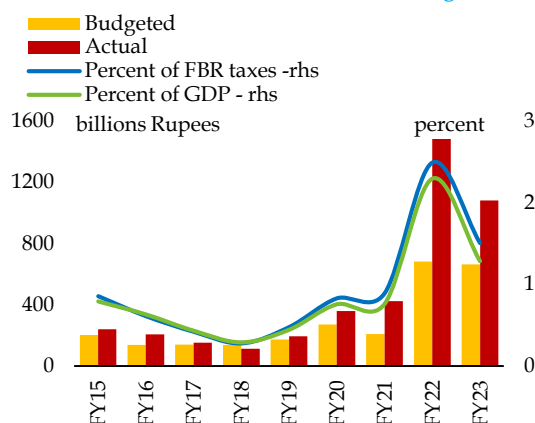
<sup>31</sup>As per Fiscal Responsibility and Debt Limitation Act, 2005 (FRDLA) amended in June 2017, "Total Debt of the Government" means the debt of the government (including the Federal Government and the Provincial Governments) serviced out of the consolidated fund and debt owed to the International Monetary Fund (IMF) less accumulated deposits of the Federal and Provincial Governments with the banking system.

<sup>32</sup>SBP (2023)<sup>b</sup>

<sup>33</sup>Raza, B. & Mughal, K. S. (2022); Shakeel, A. (2023)

<sup>34</sup>SBP (2014); SBP (2022)<sup>a</sup>; SBP (2023)<sup>a</sup>

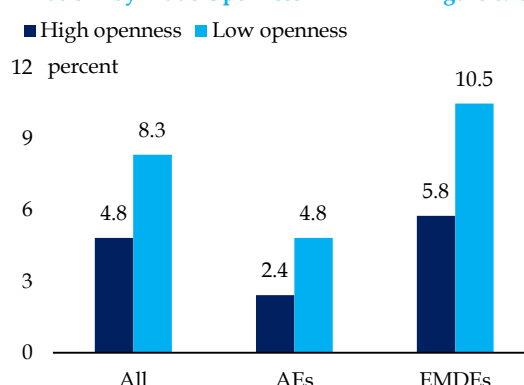
**Trend in Federal Subsidies**



Source: Ministry of Finance

**Figure 6.14**

**Inflation\* by Trade Openness**



\*median inflation for the period (1970-2017).

Source: Ha, J. et al. (2019)

**Figure 6.15**

### Trade openness

Literature suggests that countries with higher levels of trade openness tend to experience lower inflation.<sup>35</sup> (Figure 6.15). Some of the channels through which trade openness lowers inflation include better efficiency on account of capital imports, better capacity and resource utilization, increase in foreign direct investment, transfer of technology and technical knowledge and specialization in dynamic sectors. Trade openness often comes along with deregulation and globalization, which together forms a mutually reinforcing mix that fosters a competitive economy, consequently reducing monopoly pricing power. Expansion in output, as a result of trade openness, is also found to alleviate price pressures.<sup>36</sup>

The degree to which trade openness lowers inflation also depends on country specific characteristics, such as country size, import intensity in an open trade regime, and the

impact on the cost structure of the various sectors of the economy. Global Value Chain (GVC), which trade openness facilitates, also plays an important role in reducing price pressures. This is mainly because the fragmentation of production and higher share of intermediate goods in total trade that follows GVC integration can weaken the response of import prices to exchange rate movements.<sup>37</sup>

Empirical literature on the relationship between inflation and trade openness in Pakistan is limited, and suggests mixed results. While Zakaria (2010), Munir and Kiani (2011), and Mukhtar et al. (2019) do not find a negative relationship between trade openness and inflation, Hanif and Batool (2006), Mukhtar (2010), and Afzal et al. (2013) find significant inverse relationship between the two variables. These mixed results may be because Pakistan's transition to low import tariffs regime has been comparatively slower (Figure 6.16), whereas the impact of

<sup>35</sup> Romer, D. (1993); Sachsida, A. et al. (2003)

<sup>36</sup> Jin, J. (2000) cited in Ashra, S. (2002); Grossman, G. M. & Helpman, E. (1991); Przybyla, M. & Roma, M. (2005), Rogoff, K. (2003)

<sup>37</sup> Aron, J. & Muellbauer, J. (2007), Mayer, J. (2003), J. Ha, et al. (2019)

structural reforms becomes fully visible in the long term.

Moreover, Pakistan has not fully opened its economy for global trade despite reducing tariffs over the years. The country's taxation system continues to heavily rely on imports as a major source of revenue.<sup>38</sup> This increases the cost of imports and somewhat offsets the impact of trade openness on market prices.

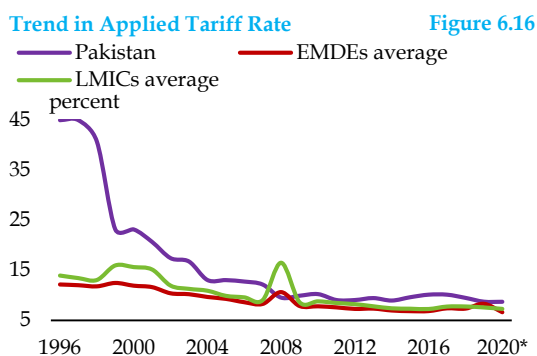
Similarly non-tariff barriers remain high, giving domestic firms a privileged domestic market position. Trade-restrictive policies have also resulted in domestic prices diverging widely from the prices in international markets. Resultantly, many of the industries developed oligopolistic characteristics which has led to high volatility in price levels. Likewise, Pakistan has been unable to deepen the linkage of its manufacturing activities with the GVCs.<sup>39</sup>

### Productivity

Accelerating productivity growth helps lower inflationary pressures, whereas its slowdown increases inflation. Slower productivity growth raises unit cost of production, leading firms to raise prices to avoid shrinking of profit margins. While this may also lower aggregate demand, which can mitigate some of the inflationary pressures, the net impact of two counteracting effects is generally understood to be inflationary both in

theory and in practice. Rising productivity growth has also been found to have lowered the NAIRU, which is a key determinant of how much an economy can grow without creating inflation.<sup>40</sup>

A variety of evidence suggests that accelerating productivity growth reduces inflation in the medium to long-term. For instance, Kim et al. (2013) found that growth in labour and Total Factor Productivity (TFP) in Korea reduced its CPI inflation between 1985-2002. Similarly, Dew-Becker and Gordon 2005 show evidence of both productivity growth lowering US inflation between 1995-2005 and its slowdown boosting inflation during 1965-80. Moreover, Schindler et al. (2004) found productivity growth to have lowered prices in China to the degree that it modestly exported disinflation to its major trading partners by lowering their import prices.



Note: Missing data values are assumed to have remained unchanged at previous period's level. \*Latest available data.

Source: World Bank

<sup>38</sup> During FY18-FY23, tax collection on imports averaged 44 percent of total tax collection. This included indirect taxes (such as sales tax on imports and customs) and direct tax collection (such as WHT or advance tax) charged at import stage).

<sup>39</sup> SBP (2020); WB (2018); Lewis, S. R. & Guisinger, S. E. (1968); SBP (2020); Ali, S. O. (2011); SBP (2020) <sup>a</sup>

<sup>40</sup> Yellen, J. (2005); Mankiw, N.G. & Ball, L. (2022)

In recognition of its importance, several central banks, such as Bank of Canada and Bank of England closely monitor quarterly productivity trend. Weak productivity growth, particularly in the goods sector, is seen as one of the upside risks to inflation given its impact on cost of production, which is assumed to be passed through to CPI inflation.<sup>41</sup>

In Pakistan, the impact of productivity on inflation has not been empirically assessed, albeit labour productivity growth seems to have an inverse relationship with inflation (**Figure 6.17**). In part this gap may be because, unlike several AEs, official estimates of labour productivity and TFP are not available on quarterly basis in the country. Hence, the degree to which productivity may be affecting inflation is unknown. However, Pakistan’s weak long term productivity trend may be seen as a major impediment to lowering of inflation.

Both capital and labour productivity slowed during 1972-2021, as a result the country’s TFP growth has remained quite low compared to other Asian economies. The general decline of productivity is noticeable across agriculture, manufacturing and services sectors.<sup>42</sup>

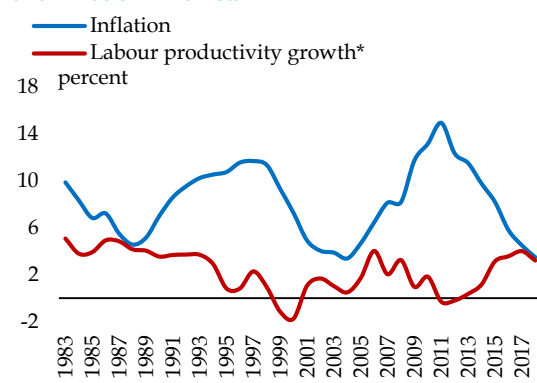
### Agriculture

Large shares of food and agricultural products in household consumption basket heightens Pakistan’s vulnerability to both

structural challenges faced by the country’s agriculture sector, and volatility in global food commodity prices. These challenges, stemming from policy, administrative and institutional weaknesses, reflect in the usage of inputs and agriculture policy distortions that contribute to low yields, as well as weak farm to market linkages – leading to high food inflation in the country.<sup>43</sup>

From the perspective of inputs, farm yields are inhibited by several factors, including poor seed usage, imbalanced use of agri-chemicals, insufficient farm mechanization, limited availability of irrigation water, inadequate agricultural extension services, land degradation and environmental hazards, such as soil salinity and water logging, and weak access to credit. Similarly, farmers often overuse or incorrectly apply pesticides, and do not use the right mix and application of fertilizer.<sup>44</sup>

**Nexus between Labour Productivity and Inflation in Pakistan** Figure 6.17



<sup>41</sup> BoE (2019); BoC (2023)

<sup>42</sup> Pasha, H.A. et al. (2002); Sabir, M. & Ahmed, Q. M. (2003); Chaudhry, A. (2009); PCoP (2011); Amjad, R. & Awais, N. (2016); Saleem, H. et al. (2019); Siddique, O. (2022) <sup>a</sup>, Siddique, O. et al. (2023) Javid, N. & Ahmed, G. (2021)

<sup>43</sup> Rana, W. et al. (2022); Horst, A. & Watkins, S. (2022)

<sup>44</sup> Horst, A. & Watkins, S. (2022); SBP (2023) <sup>a</sup>; Jafri, S. K. et al. (2022); SBP (2014); SBP (2007) ; SBP (2014); SBP (2009); Khan, M. J. et al. (2010); Ejaz, N. & Ahmed, M. (2017)

In addition to these, there are policy distortions that lead to inefficient allocation of resources and impairs agriculture productivity. For instance, wheat procurement policy and support prices adds to the fiscal burden through commodity financing. Moreover, as a result of high procurement prices amid regulated imports, domestic wheat prices tend to exceed the import price parity levels.<sup>45</sup> Similarly, the policy of water underpricing is causing distortions that are preventing more efficient crop allocations and thus competitive prices.<sup>46</sup>

As a result of inadequate inputs and policy distortions, average yields of major crops is about 55 percent lower than that of domestic progressive farmers; it is also low compared to the region. There has been some increase in yields over the years but research shows that it has been mostly driven by increased use of inputs rather than improvements in productivity.<sup>47</sup> Similarly, livestock yields suffer due to poor fodder quality, shortages in supply of protein and onset of diseases, which inevitably impact dairy and meat inflation (See also Chapter 3).

Low yields in conventional crops leaves little land and other resources for other crops. This, coupled with the lack of incentives, and policy and institutional focus on other crops adds to avoidable

inflationary risks channeled through high food imports, and their susceptibility to global food prices and exchange rate depreciation. For example, farmers who could potentially shift to other crops, such as pulses, palm and soybean that are mostly imported, do not do so because existing incentives and policy focus are mainly aligned with major crops.<sup>48</sup>

Lastly, weak farm to market linkages also adds to price pressures. In the absence of adequate storage and logistics, such as cold storage chain, crop wastage is high whose cost is added to the price paid by consumers. Moreover, growers of vegetables and fruits are exploited by market agents, particularly pre-harvest contractors whose cash margins equal about a third of retail price. Unlike best practices, the long list of intermediaries in Pakistan's farming sector supply chain means that consumers end up paying inflated prices. There is also evidence of opaque trading practices and traders' collusion which distort competitive prices.<sup>49</sup>

#### *Administered Prices: Energy*

The federal and provincial governments' policies of price administration and regulation in Pakistan are also contributing to underlying inflationary pressures in several sectors, such as pharma, dairy, and

<sup>45</sup> Studies show that a reduction in wheat procurement volume need not compromise wheat price and supply stability, which can be managed through trade openness and price bands based on using rules based adjustable tariffs that set floor and ceiling prices to follow world prices. Source: Ahmed, S. A. & Gautam, M. (2013)

<sup>46</sup> WB (2022); Ahmed, S. A. & Gautam, M. (2013); A.W. Rana (2020)

<sup>47</sup> Ahmed, S. A. & Gautam, M. (2013); WB (2022); WB (2023)

<sup>48</sup> SBP (2022) b; SBP (2019); USDA (2022)

<sup>49</sup> A. Khalid & Sabahat (2020); Gafoor, A. et al. (2022); Ejaz, N. & Ahmed, M. (2017); Horst, A. & Watkins, S. (2022); WB (2022)

meat, as well as agriculture produce where there are intermittent focus on regulating retail price. On the one hand, this results in sharp adjustments when price revisions become unavoidable. On the other hand, capping of prices disincentivises investments in efficient production, storage and distribution which could help increase competition and lower prices in the medium to long term. One sector, where administered prices and other regulatory challenges present a major structural factor behind high inflation in Pakistan, is energy.<sup>50</sup>

With rising global energy prices, the share of energy in explaining variation in inflation across economies has increased over time. This is not only because energy costs raise the cost of goods and services produced thereof, but also because higher energy costs positively affects inflationary expectations.<sup>51</sup> In Pakistan, energy prices have the third biggest direct contribution to headline inflation index after food and core inflation. However, it also contributes to both food and core components through input costs, such as electricity and transport.<sup>52</sup> In addition to the rising cost of energy imports, a host of policy and structural challenges in energy sector – both power and gas – manifests as peculiar country characteristics that are driving inflationary pressures in Pakistan.

These policy and regulatory challenges impact inflation through different channels, such as untargeted subsidies and discretionary pricing policy discussed in the preceding sub-section on fiscal policy. This sub-section sheds light on supply side constraints and policy challenges that are contributing to overall costlier energy tariffs and supply shortages in both power and gas sectors for several years.<sup>53</sup>

#### *Power:*

In the power sector, both policy factors, inefficiencies in generation, transmission constraints, and under-utilization of efficient plants are contributing to higher tariffs. For instance, as part of the power policy's 'take or pay' pricing model, power tariffs include capacity purchase price (CPP), which comprises fixed costs, such as land and infrastructure for power evacuation, debt servicing charges; and guaranteed return on equity which is indexed to the US dollar. In addition to the USD, other components of the CPP are indexed with various factors, such as domestic interest rates, foreign interest rates, domestic inflation, foreign inflation. The indexation is reviewed and adjusted on a quarterly basis.<sup>54</sup>

These capacity payments are charged at the rate of full production capacity

<sup>50</sup> Nazar, N. (2021); Kugelman, M. et al. (2015); Khan, U. et al. (2021)

<sup>51</sup> Abbas, H. et al. (2015)

<sup>52</sup> For instance, the transport sector is the largest user of petroleum product with very high and inelastic demand for diesel and petrol, generating inflationary pressures in the country. Source: M. Omer (2018)

<sup>53</sup> NEPRA (2023); CDP (2015)

<sup>54</sup> "During life of the project operations, quarterly adjustment/indexations for local inflation, foreign inflation, exchange rate variations and interest rate variations will be made on 1<sup>st</sup> July, 1<sup>st</sup> October, 1<sup>st</sup> January and 1<sup>st</sup> April each year based on latest available date with respect to CPI notified by the Pakistan Bureau of Statistics (PBS), US CPI issued by US Bureau of Labor Statistics and selling rate of foreign currencies (US Dollar, British Pound Sterling Euro and Japanese Yen) issued by the National Bank of Pakistan." Source: MoWP (2015)

irrespective of the units of electricity produced and sold which inflates unit prices.<sup>55</sup> This problem worsens in times of exchange rate depreciation, higher global and domestic interest rates, and rising inflation, which has been the trend in recent years.

Moreover, the insufficient and overloaded transmission system also contributes to higher capacity payments. Similarly, there are instances when the merit order list of efficient power plants<sup>56</sup> is not followed. This implies that consumers pay for costlier units produced by inefficient plants in addition to the capacity charges paid for the unutilized capacity of the efficient plants.<sup>57</sup>

In addition, due to frequent electricity outages, businesses resort to costlier alternatives, such as power generation through petrol, diesel or RLNG.<sup>58</sup> While the cost of such private power generation is not directly tracked by the NCPI inflation, it nevertheless contributes to cost of goods and services and hence adds to inflationary pressures.

*Gas:*

In the gas sector, inadequate and discretionary policy both from the

perspective of pricing and usage has been a longstanding issue. Tariffs for household consumers have been kept well below those for industry, power plants and commercial users. Household consumers, which had a share of about 23 percent in total gas consumption in FY22, have been given priority access to gas compared to commercial and industrial producers.<sup>59</sup> This has had a two pronged affect. At one end, the pricing policy increases the cost of gas paid by commercial and industrial users who pass on the impact to retail price of goods and services. At the other end, the pricing policy as well as inefficient<sup>60</sup> usage of gas particularly by domestic consumers has resulted in faster depletion of the country's gas reserves.

In order to address the growing supply-demand gap, Pakistan started imported LNG in 2015. However, unlike global best practices, Pakistan did not have a policy to pool the cost of domestic and imported gas until recently, owing to the policy of subsidizing household consumers at the cost of commercial, industrial and other large consumers. As a result, producers of goods and services were paying much higher tariffs than they would have paid had Pakistan's gas price policy graduated to that of weighted average cost.<sup>61</sup>

<sup>55</sup> NEPRA (2023)

<sup>56</sup> Power generation plants listed in order of efficiency.

<sup>57</sup> SBP (2019); NEPRA (2022); NEPRA (2023)

<sup>58</sup> NEPRA (2023)

<sup>59</sup> CDPR (2015)

<sup>60</sup> For example, the ubiquitous use of gas geysers that have an efficiency of only 30 percent. The now defunct policy of gas allocation to transport sector is another example of inefficient usage. Conservation through efficient usage could potentially save up to 20 percent gas resources. CDPR (2015)

<sup>61</sup> In 2022, the government passed a bill for weighted average cost of gas (WACOG), under which gas from all sources was to be priced on weighted average cost basis. However, the bill has not been implemented yet.

### **Demography**

The effect of demography on inflation is noted to be a cumulative and a slow process, which has a non-trivial impact over the long term.<sup>62</sup> The impact can be both disinflationary and inflationary. The contrasting nature of this impact is rooted in several factors, the most critical of which is the demographic structure. In particular, it is the nature and extent of the dependency ratio of a country's population – the proportion of young (below 15 years of age) and old population (over 64 years of age) to total population – that effects inflation outcomes.

The primary channels through which demographic structure impacts inflation is aggregate demand and aggregate supply. Both the young and old cohorts of a population contribute to aggregate demand without providing labour and thus do not contribute to aggregate supply. However, depending on a variety of factors – such as life expectancy, growth in per capita income, and the level of savings – high dependency ratio is found to be disinflationary in the presence of high old age dependency, and inflationary when high dependency ratio is driven by young dependency.<sup>63</sup>

High old age dependency is disinflationary because they tend to consume less compared to young dependents, and they also typically accumulate some savings during their life-cycle, particularly during

their middle ages. The middle aged working population (MAWP) – population 40-64 years of age – is found to have a disinflationary impact given their status as net savers i.e., their income is more than their consumption. The peak of lifecycle savings also usually occur in this age bracket.<sup>64</sup>

Moreover, if life expectancy is high, the MAWP saves for post-retirement years. The lower these years are perceived to be, the less individuals choose to save to fund their future consumption. The savings of both the aging MAWP and old population are typically invested in safer assets, such as bonds, especially government bonds, rather than riskier assets such as real estate or stocks. On the contrary, high young dependency contributes to low savings, given their net consumer status, whereas it can also increase the size of fiscal deficits because of a low direct tax base.<sup>65</sup>

Most research at the intersection of demography and inflation has focused on developed economies. For example, early researchers studied Japan, being one of the first fast ageing AEs, followed by studies on some European economies. More recent studies focus on emerging economies, such as China, Chile and Mexico.<sup>66</sup> Research on Pakistan at this nexus is scant except for Jafri et al. (2016). Based on 1988-2014 data, the paper finds that population growth contributes to increase in inflation in Pakistan, whereas increase in MAWP contributes to decrease in inflation.

<sup>62</sup> Han, G. (2022)

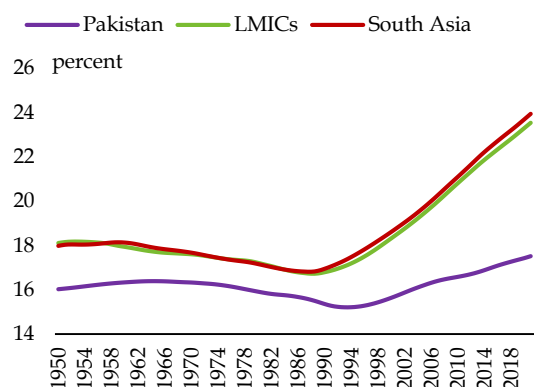
<sup>63</sup> Lee, J. et al. (2014); Han, G. (2022)

<sup>64</sup> Jaffri, A.A. et al. (2016); Hammer, B. et al.; Nayab, D. & Siddique, O. (2020)

<sup>65</sup> Anderson, D. et al. (2014); Lindh, T. & Malmberg, B. (2000); Katagiri, M. et al. (2014)

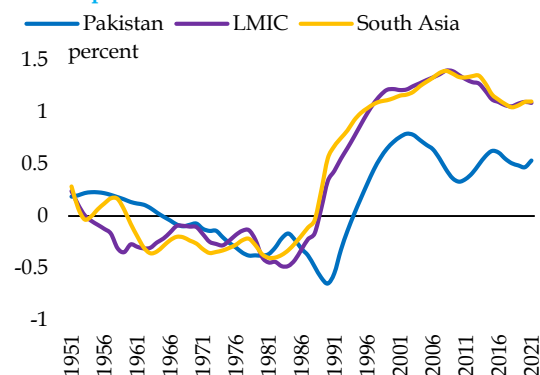
<sup>66</sup> Bobeica, E. et al. (2017); Broniatowska, P. (2019); Han, G. (2022)

Share of MAWP in Total Population **Figure 6.18**



Sources: SBP Staff Calculations, United Nations Population Division

Difference of Growth in MAWP and Total Population **Figure 6.19**

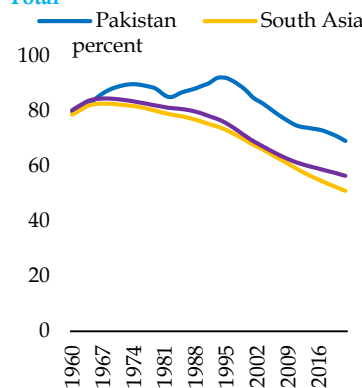


Sources: SBP Staff Calculations, United Nations Population Division

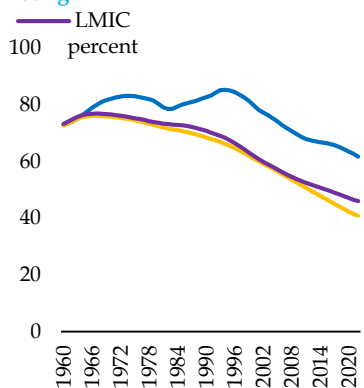
The underlying message from research on developed and developing economies is this: high dependency ratio driven by old dependency tends to be disinflationary if accompanied by increasing life expectancy and high level of savings. Conversely, high dependency ratio of a population is inflationary when youth dependency is high; life expectancy is low; and there is low level of savings. On all of these metrics Pakistan does not perform well.

Pakistan's share of MAWP relative to its total population is low when compared to peer economies (**Figure 6.18**). While Pakistan's MAWP growth net off population growth,<sup>67</sup> rose during the 90s, it has stagnated over the last 20 years and remains low compared to peer economies (**Figure 6.19**). At the same time, young dependency remains high owing to high fertility rates (**Figure 6.20a, 6.20b & 6.20c**).<sup>68</sup> Likewise, while life expectancy

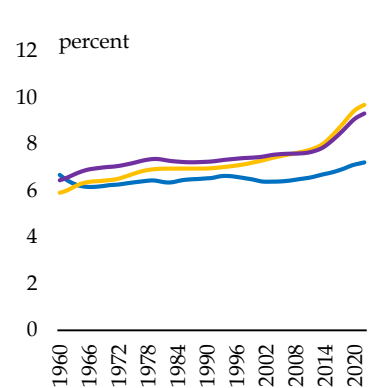
Dependency Ratio - Total **Figure 6.20 a**



Dependency Ratio - Young **Figure 6.20 b**



Dependency Ratio - Old **Figure 6.20 c**



Source: World Bank

<sup>67</sup> Assuming equal impact, a positive MAWP growth net of population growth creates disinflationary pressures.

Source: Jaffri, A. A. et al. (2016)

<sup>68</sup> SBP (2021).

has improved to 66 years over time, it remains much lower compared to 80 years of advanced economies, which have experienced disinflationary pressures .

As a result, the life-cycle deficit, which refers to income net off consumption, persists until 29 years of age in Pakistan. This is compared to a minimum of 23 (France) and a maximum of 27 (Italy) in a sample of 10 European countries. Evidence from studies in National Transfer Accounts, which estimates the generational economy, shows that the saving age not only begins much later in Pakistan, it also ends much earlier than other countries. Moreover, the working age population, saves less than other countries indicating lower productivity or labour market imperfections.<sup>69</sup> These conditions may continue to stoke long term inflationary pressures.

#### 6.4 Final Remarks

Notwithstanding the importance of various determinants of inflation, such as global commodity prices and fiscal policy, and the structural issues that need to be addressed to achieve price stability on a sustainable basis, the role of monetary policy remains instrumental given that money supply and inflation expectations have been found to be significant contributors to inflation. Nonetheless, the size of adjustments in the policy rate and its consequent economic costs can be substantially reduced by addressing the long standing policy and structural challenges.

The SBP has taken measures during the ongoing high inflationary episode to contain demand pressures and prevent de-anchoring of inflation expectations. In addition to a host of macro-prudential measures, the SBP cumulatively raised the policy rates by 1500 basis points during FY22 and FY23. Since June FY23, it has maintained the policy rate at 22 percent, as adjustments in administered energy prices, in the backdrop of longstanding structural issues, continue to impact inflation outturns. As a result of monetary tightening, supported by some fiscal consolidation, lower global commodity prices, and improved domestic crop output, the NCPI inflation came down from its peak of 38 percent in May 2023 to 29.7 percent in December 2023, whereas core inflation has also gradually started to decelerate.

Whilst the SBP will continue to anchor inflationary expectations and contain the second round impact of supply-shocks, as and when need be, further fiscal consolidation and reduction in uncertainty is imperative to achieve the medium term target of 5 – 7 percent by the end of FY25. Further, given the intensive and successive nature of inflationary pressures stemming from non-monetary sources and vulnerabilities thereof, policy and structural challenges need to be addressed as a necessary tailwind to create a conducive environment for a long-term disinflationary trend to set in and to achieve low and stable inflation on a sustainable basis.

<sup>69</sup> Hammer, B. et al. (2014); Nayab, D. & Kanwal, N. (2023); Nayab, D. & Siddique, O. (2020)

To effectively anchor inflationary expectations, it is important that the government sets the inflation target range in consultation with the SBP – ala the practice of joint agreements between the government and central bank in other countries, such as Canada, India and England. It also necessitates that deviations from planned fiscal policies, including the setting of administrative prices, are neither significant in magnitude nor in timing to avoid affecting monetary policy credibility and stoking long term inflationary expectations.

In addition, sectoral reforms in agriculture and energy are critical to address the issues of supply side constraints and inefficiencies, and their impact on prices. It is also imperative to relax the policy of price administration and to de-cap prices to help increase competition in the medium to long term and thereby lower inflationary pressure. Moreover, whilst productivity growth is needed to improve supplies and lower per unit costs, there is also a need to significantly lower the pace of population growth to ease underlying demand pressures in the long term.

Given the wide ranging scope of these challenges, a whole-of-the-government approach, across federal, provincial and local tiers of government and institutions, is needed as part of consistent efforts to bring down the long term trend of high inflation in Pakistan. The absence of such an approach risks overburdening the monetary policy as the sole instrument to keep inflation low and stable. Reforms to address the structural weaknesses would make monetary policy more effective and

efficient. Moreover, as flagged at various occasions in preceding sections, there are gaps in collective and up to date understanding of inflation dynamics in the country. Plugging these gaps in understanding requires concerted efforts by academia, government institutions, and policy research institutes alike.

### References:

- Abbas, H. et al. (2015). Inflation Expectation and Economic Perception in a Developing Country Setting, Consumer Confidence Survey Draft Paper, State Bank of Pakistan
- Abdullah, M. & Kalim, R. (2012). Empirical Analysis of Food Price Inflation in Pakistan, *World Applied Sciences Journal*, Vol. 16, No. 7, pp. 933-939
- Afzal, M. et al. (2013). Openness, Inflation and Growth Relationships in Pakistan: An Application of ARDL Bounds Testing Approach, *Pakistan Economic and Social Review*, Vol. 51, No. 1, pp. 13-53
- Ahmad, S. et al. (2016). The Role of Money in Explaining Business Cycles for a Developing Economy: The Case of Pakistan, SBP Working Paper Series, No. 74, State Bank of Pakistan
- Ahmad, E. & Ali, S. A. (1999). Exchange Rate and Inflation Dynamics, *The Pakistan Development Review*, Vol. 38, No. 3, pp. 235-251,
- Ahmed, F. et al. (2013). Determinant of Inflation in Pakistan: An Econometrics Analysis, Using Johansen Co Integration Approach, *European Journal of Business and Management*, Vol. 5, No. 13
- Ahmed, Q. M. et al. (2014). Determinants of Recent Inflation in Pakistan: Revisit, *Pakistan Journal of Commerce and Social Sciences*, Vol. 8, No. 1, pp. 170- 184
- Ahmed, S. A. & Gautam, M. (2013). Agriculture and Water Policy: Toward Sustainable Inclusive Growth, WB Policy Paper Series on Pakistan, Vol. 1, No. PK 16/12, World Bank
- Aisen, A. & Veiga, F. J. (2006). Does Political Instability Lead to Higher Inflation? A Panel Data Analysis, *Journal of Money, Credit and Banking*, Vol. 38, No. 5, pp. 1379-1389

*Inflation Dynamics in Pakistan: Determinants and Structural Challenges*

- Albrizio, S. et al. (2023). Managing Expectations: Inflation and Monetary Policy, in *World Economic Outlook: Navigating Global Divergences Report*, International Monetary Fund, Washington. D.C
- Albrizio, S. & Bluedorn, J. (2023). How Managing Inflation Expectations Can Help Economies Achieve a Softer Landing, Available at: <https://www.imf.org/en/Blogs/Articles/2023/10/04/how-managing-inflation-expectations-can-help-economies-achieve-a-softer-landing#:~:text=Inflation,IMF Blog>, Accessed on January 05, 2024.
- Ali, K. & Khalid, M. (2019). Sources to Finance Fiscal Deficit and Their Impact on Inflation: A Case Study of Pakistan, *The Pakistan Development Review*, Vol. 58, No. 1, pp. 27-43
- Ali, M. G. et al. (2015). What lies at the core of core inflation? An empirical analysis to identify the determinants of core inflation in Pakistan, *IBA Business Review*, Vol. 10, No. 1,
- Ali, S. O. (2011). Power, Profits and Inflation: A Study of Inflation and Influence in Pakistan. SBP Working Paper No. 42, State Bank of Pakistan
- Amjad, R. & Awais, N. (2016). Pakistan's Productivity Performance and TFP Trends, 1980- 2015: Cause for Real Concern, *The Lahore Journal of Economics*, Vol. 21, pp. 33-63
- Anderson, D. et al. (2014). Is Japan's Population Aging Deflationary? IMF Working Paper No. 2014/139, International Monetary Fund
- Arby, M. F. & Ghauri S. P. (2016). The Relationship between Wholesale Price Index and Consumer Price Index, SBP Staff Note 3/16, State Bank of Pakistan
- Arby, M. F. & Ali, A. (2017). Threshold Inflation in Pakistan. SBP Research Bulletin Vol. 13, No. 1, State Bank of Pakistan
- Aron, J. & Muellbauer, J. (2007). Inflation dynamics and trade openness: With an application to South Africa, working paper, Center for the studies of African Affairs, University of Oxford
- Ashra, S. (2002). Inflation and Openness: A Study of Selected Developing Economies, Working Paper No. 84, Indian Council for Research on International Economic Relations
- Beckmann, J. et al. (2022). Inflation expectations: quo vadis? Monetary Dialogue Papers, European Parliament's committee on Economic and Monetary Affairs (ECON)
- Bernanke, B. (2013). Communication and Monetary Policy: a speech at the National Economists Club Annual Dinner, Available at: [www.federalreserve.gov/newsevents/speech/bernanke20131119a.htm](http://www.federalreserve.gov/newsevents/speech/bernanke20131119a.htm), Accessed on January 03, 2024
- Bhundia, A. (2002). An Empirical Investigation of Exchange Rate Pass-Through in South Africa, IMF Working Paper No. 2002/165, International Monetary Fund
- Bobeica, E. et al. (2017). Demographics and inflation, ECB Working Paper 2006, European Central Bank
- BoC (2023). Monetary Policy Report, Bank of Canada, Available at [www.bankofcanada.ca/wp-content/uploads/2023/10/mpr-2023-10-25.pdf](http://www.bankofcanada.ca/wp-content/uploads/2023/10/mpr-2023-10-25.pdf), Accessed on 6 Feb 2024
- BoE (2019), Monetary Policy Report, Bank of England Available at [www.bankofengland.co.uk/-/media/boe/files/monetary-policy-report/2019/november/monetary-policy-report-november-2019.pdf](http://www.bankofengland.co.uk/-/media/boe/files/monetary-policy-report/2019/november/monetary-policy-report-november-2019.pdf), Accessed on 6 Feb 2024
- Bokil, M. & Schimmelpfennig, A. (2005). Three Attempts at Inflation Forecasting in Pakistan, IMF Working Paper WP/05/105, International Monetary Fund
- Broniatowska, P. (2019). Population Ageing and Inflation, *Journal of Population Ageing*, Vol. 12, pp. 179-193
- Burbidge, J. & Harrison, A. (1985). An Historical Decomposition of The Great Depression to Determine the Role of Money, *Journal of Monetary Economics*, Elsevier, Vol. 16, No. 1, pp. 45-54
- Campillo, M. & Miron, J. A. (1997). Why Does Inflation Differ Across Countries? pp. 335-362 in Romer, C. D. & Romereds, D. H. (eds.). *Reducing Inflation: Motivation and Strategy*, University of Chicago Press, Chicago
- CDPR (2015). Gas Report R1502, Consortium for Development Policy Research
- Chaudhry, A. (2009). Total Factor Productivity Growth in Pakistan: An Analysis of the Agricultural and Manufacturing Sectors, *Lahore Journal of Economics*, Vol. 14, pp. 1-16
- Choudhri, E. U. & Khan, M. S. (2002). The Exchange Rate and Consumer Prices in Pakistan: Is Rupee Devaluation

*State Bank of Pakistan Half Year Report 2023-2024*

- Inflationary? *The Pakistan Development Review*, Vol. 41, No. 2, pp. 107-120.
- Chaudhry, M. A. & Abe, K. (1999). Pakistan Economy: Past Trend, Current Situation and Future Prospects, *Chiiba University Economic Journal*, Vol. 12, No. 1, pp. 49-85
- Concrad, C. et al. (2021). The Role of Information and Experience for Households' Inflation Expectations, Deutsche Bundesbank Discussion Paper No. 07/2021
- Cuadra, G. & Sapriza, H. (2008). Sovereign default, interest rates and political uncertainty in emerging markets, *Journal of International Economics*, Vol. 76, No. 1, September 2008, pp. 78-88
- Dew-Becker, I. & Gordon, R. J. (2005). Where Did the Productivity Growth Go? Inflation Dynamics and the Distribution of Income, NBER Working Paper No. 11842
- Duma, N. (2008). Pass-Through of External Shocks to Inflation in Sri Lanka, IMF Working Paper WP/08/78, International Monetary Fund
- Ejaz, N. & Ahmed, M. (2017). Distortions to Agricultural Incentives in Light of Trade Policy: A Study on Pakistan, World Bank
- Fine, O. et al. (2022). Cochrane and Coleman: The Fiscal Theory of the Price Level and Inflation Episodes, Available at: <https://blogs.cfainstitute.org/investor/2022/06/22/cochrane-and-coleman-the-fiscal-theory-of-the-price-level-and-inflation-episodes/>, Accessed on February 23, 2024
- Gafoor, A. et al. (2022). Building Horticulture Value Chains and Reducing Postharvest Losses in Pakistan, ADB Briefs No 235, Asian Development Bank
- Grossman, G. M. & Helpman, E. (1991). Innovation and Growth in the Global Economy, Cambridge, Massachusetts: MIT Press
- Ha, J. et al. (2023). One-stop source: A global database of inflation, *Journal of International Money and Finance*, Vol.137, No.102896
- Ha, J. et al. (2019). *Inflation: Concepts, Evolution, and Correlates: Introduction* in F. Ohnsorge et al. (eds), Inflation in Emerging and Developing Economies Evolution, Drivers, and Policies, World Bank, Washington D.C
- Ha, J. et al. (2019). Inflation in Emerging and Developing Economies Evolution, Drivers, and Policies, Washington DC: World Bank
- Haider, A. & Khan, S.U. (2007). Does Volatility in Government Borrowing Leads to Higher Inflation? Evidence from Pakistan, MPRA Paper No. 17008
- Hammer, B. et al. (2014). Production activities and economic dependency by age and gender in Europe: A cross-country comparison, *The Journal of the Economics of Ageing*, Vol. 5
- Hanif, M. N and Batool, I. (2006). Openness and Inflation: A Case Study of Pakistan, MPRA paper No. 10214
- Hanif, M. N. and Khan, M. H. (2012). Role of Demand and Supply Shocks in Driving Inflation: A Case Study of Pakistan, MPRA Paper No. 48884
- Hanif, M. N. (2014). Monetary Policy Experience of Pakistan, MPRA Paper No. 60855
- Hanif, M. N. et al. (2017). Global Commodity Prices and Domestic Inflation: A Case Study of Pakistan, SBP Research Bulletin, Vol. 13, No. 1, State Bank of Pakistan
- Hanif, M. N. et al. (2022). Time-Frequency Analysis of Determinants of Inflation Rate in Pakistan, SBP Working Paper Series 111, State Bank of Pakistan
- Han, G. (2022). Demographic Changes and Inflation Dynamics, Hong Kong Institute for Monetary and Financial Research
- Harri, A. et al. (2009). The Relationship between Oil, Exchange Rates, and Commodity Prices, *Journal of Agricultural and Applied Economics*, Vol. 41, No. 2, pp. 501-510
- Harrison, O. et al. (2023). Is High Debt Constraining Monetary Policy? Evidence from Inflation Expectations, IMF Working Paper WP/23/143, June 2023, International Monetary Fund
- Hasan, M. A. et al. (1995). What Explains the Current High Rate of Inflation in Pakistan? *The Pakistan Development Review*, Vol. 34, No. 4, Part III, pp. 927 – 943
- Hassan, M. & Hanif, M. N. (2012). Role of Demand and Supply Shocks in Driving Inflation: A Case Study of Pakistan, MPRA Paper 48884, University Library of Munich, Germany

*Inflation Dynamics in Pakistan: Determinants and Structural Challenges*

- Hesary, F. T. et al. (2018). Volatility Linkages Between Energy and Food Prices: Case of Selected Asian Countries, ADBI Working Paper Series, No. 829
- Horst, A. & Watkins, S. (2022). Enhancing Smallholder Incomes by Linking to High Value Markets in Pakistan's Punjab and Sindh Provinces, World Bank
- Hussain, F. et al. (forthcoming). "Underlying Factors of Inflation in Pakistan: Dynamic Effects and Contributions".
- Hussain, F. & Rehman, M. (2020). Estimation of Medium Term Inflation Target for Pakistan, SBP Working Paper Series No. 104, State Bank of Pakistan
- Hussain, M. (2005). Inflation and Growth: Estimation of Threshold Point for Pakistan, *Pakistan Business Review*, Vol. 17, No. 3,
- Hyder, K. & Hussain, S. Q. (2019). Asymmetric Pass Through of Global Oil Prices to Macroeconomic Variables of Pakistan, SBP Research Bulletin Volume 15, State Bank of Pakistan
- Hyder, K. et al. (2006). How External Shocks and Exchange Rate Depreciations Affect Pakistan? Implications for Choice of an Exchange Rate Regime, SBP Research Bulletin, Vol. 2, No. 1, State Bank of Pakistan
- Hyder, Z. & Shah, S. (2004). Exchange Rate Pass-Through to Domestic Prices in Pakistan, SBP Working Paper Series 5, State Bank of Pakistan
- IMF (2023). World Economic Outlook: Navigating Global Divergences, October Issue
- Jácome, L. I. & Vázquez, F. (2008). Is There Any Link between Legal Central Bank Independence and Inflation? Evidence from Latin America and the Caribbean, Paolo Baffi Centre Research Paper No. 2008-07
- Jaffri, A. A. et al. (2016). Impact of Demographic Changes On Inflation in Pakistan, *Pakistan Economic and Social Review*, Vol. 54, No. 1, pp. 1-14.
- Jafri, S. K. et al. (2022). Investigating Pakistan's Seed Industry Dynamics. SBP Staff Notes 02/22, State Bank of Pakistan
- Jafri, S. K. et al. (2023). Escape Clauses for Inflation Targeting Regime, SBP Staff Notes 01/23, State Bank of Pakistan
- Jalil, A. et al. (2022). Inflation Analytics Report, November, Research for Social Transformation & Advancement (RASTA)- Pakistan institute of Development Economics (PIDE)
- Javaid, N. & Ahmed, G. (2021). Productivity Dynamics: A Case of Pakistan, *Review of Economics and Development Studies*, Vol. 7, No. 2, pp. 187-203
- Lee, J. et al. (2014). Impact of Demographic Changes on Inflation and the Macroeconomy, IMF working paper 14/210, International Monetary Fund
- Katagiri, M. et al. (2014). Aging and Deflation from a Fiscal Perspective, Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute, Working Paper No. 218.
- Kzakis, P. (2023). Uncertainty and Market Power: An Empirical Investigation, University of Glasgow
- Khalid, A. (2015). Is the PKR Overvalued?, SBP Staff Notes 1/15, State Bank of Pakistan
- Khalid, A. & Sabahat (2020). Price Stabilization Mechanism in Pakistan's Food Market: Exploring Issues and Potential Challenge, SBP Staff Notes 02/20, State Bank of Pakistan
- Khalid, F. (2023). An Intermediate Target for the SBP: Headline or Core Inflation?, *International Journal of Contemporary Issues in Social Sciences*, Vol. 2, No. 4
- Khan, A. A. et al. (2007). Determinants of Recent Inflation in Pakistan, Research Report No. 6, Social Policy and Development Center
- Khan, M. (2015). The PKR and Price-Setting Behavior, Staff Notes 02/15, State Bank of Pakistan
- Khan, M. J. et al. (2010). Use of Pesticides and Their Role in Environmental Pollution, *World Academy of Science, Engineering and Technology*, Vol. 4, No. 12, pp. 85-91
- Khan, S. U. & Saqib, O. F. (2009). Political Instability and Inflation in Pakistan, *Journal of Asian Economics*, Vol. 22, No. 6, pp. 540-549
- Khan, U. et al. (2021). A Health Check for a Better Future: Unleashing the Potential of Pharmaceuticals in Pakistan, Report published by The Pakistan Business Council under supervision of The Consortium for Development Policy Research
- Kim, S. et al. (2013). Does productivity growth lower inflation in Korea? *Applied Economics*, Vol. 45, No. 16, pp. 2183-2190

*State Bank of Pakistan Half Year Report 2023-2024*

- Koç, U. et al. (2021). The Role of Expectations in the Inflation Process in Turkey: Have the Dynamics Changed Recently? Working Paper, No. 21, Issue No. 02
- Kugelman, M. et al. (2015) Pakistan's Interminable Energy Crisis: Is There Any Way Out?, Wilson Centre
- Laurens, B. & de la Piedra, E.G. (1998). Coordination of Monetary and Fiscal Policies, IMF Working Paper 98/25, International Monetary Fund
- Leeper, E.M. (2023). Fiscal Dominance: How Worried Should We Be? Policy Brief, Mercatus Center or George Mason University
- Lewis, S. R. & Guisinger, S. E. (1968). Measuring Protection in a Developing Country: The Case of Pakistan. *Journal of Political Economy*, Vol. 76, No. 6, pp. 1170-1198.
- Lindh, T. & Malmberg, B. (2000). Can age structure forecast inflation trends? *Journal of Economics and Business*, Vol. 52, No. 1-2, pp. 31-49
- Lubik, T.A. (2022). Analyzing Fiscal Policy Matters More Than Ever: The Fiscal Theory of the Price Level and Inflation, Available at: [https://www.richmondfed.org/publications/research/economic\\_brief/2022/eb\\_22-39](https://www.richmondfed.org/publications/research/economic_brief/2022/eb_22-39), Accessed on February 22, 2014
- Mankiw N.G. and Ball, L. (2022). The NAIRU in Theory and Practice, *Journal of Economic Perspectives*, Vol. 16, No. 4, pp. 115-136
- Mayer, J. (2003). The Fallacy of Composition: A Review of the Literature, UNCTAD Discussion paper 106, United Nations Conference on Trade and Development
- McCarthy, J. (1999). Pass-through of Exchange Rate and Import Prices to Domestic Inflation in Some Industrialised Economies, BIS working paper No. 9, Bank for International Settlements
- Mensi, S. et al. (2023). Inflation Targeting, Economic Growth and Financial Stability: Evidence from Emerging Countries, *Quantitative Finance and Economics*, Vol. 7, No. 4, pp. 697-723
- Moessner, R. (2022). Determinants of Inflation Expectations in the Euro Area, *Intereconomics*, Vol. 57, No. 2, pp. 99-102
- MoF (2021): Brief on SBP Amendment Act 2021, Available at: [www.finance.gov.pk/SBP\\_Act\\_2021.pdf](http://www.finance.gov.pk/SBP_Act_2021.pdf) accessed on February, 08, 2024
- Moinuddin (2010). Monetary Overhang in Pakistan, *Research Bulletin* Vol. 6, No. 2, State Bank of Pakistan
- MoWP (2015). Power Generation Policy 2015, Ministry of Water and Power
- Mubarik, Y.A. (2005). Inflation and Growth: An Estimate of the Threshold Level of Inflation in Pakistan, *SBP Research Bulletin*, Vol. 1, No. 1, State Bank of Pakistan
- Mukhtar, T. (2010). Does Trade openness reduce Inflation? Empirical Evidence from Pakistan, *Journal of Economic Cooperation and Development*, Vol. 33, No. 2, pp. 33-52
- Mukhtar, T. et al. (2019). Is Trade Openness Inflationary in Developing Economies, *Pakistan Economic and Social Review*, Volume 57, Issue No. 1, pp. 47-68
- Munir, S. & Kiani, A. K. (2011). Relationship between Trade Openness and Inflation: Empirical Evidences from Pakistan (1976-2010), *The Pakistan Development Review*, Vol. 50, No. 4, Part II, Winter 2011, pp. 853-876
- Nayab, D. & Siddique, O. (2020). National Transfer Accounts for Pakistan: Estimating the Generational Economy for Pakistan, Pakistan Institute of Development Economics
- Nayab, D. & Kanwal, N. (2023). Provincial Transfer Accounts: Generational Economy in Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan, Pakistan Institute of Development Economics
- Nazar, N. (2021). Just-in-Time Policy Note on Food Inflation in Pakistan, World Bank Report
- Nazlioglu, S & Soytas, U. (2011). Oil price, Agricultural commodity prices, and the Dollar: A Panel Cointegration and Causality Analysis, *Journal of Energy Economics*, Vol. 34, No. 4, pp. 1098-1104
- NEPRA (2022). State of Industry Report 2022, Islamabad; National Electric Power Regulatory Authority
- NEPRA (2023). State of Industry Report 2023, Islamabad; National Electric Power Regulatory Authority
- Nguyen, V. B. (2015). Effects of Fiscal Deficit and Money Supply M2 on Inflation: Evidence from selected economies of Asia, *Journal of Economics, Finance and Administrative Science*, Vol. 20, pp 49-53
- Ocampo, S. & Rodriguez, N. (2012). An Introductory Review of a Structural VAR-X Estimation and

*Inflation Dynamics in Pakistan: Determinants and Structural Challenges*

- Applications, *Colombian Journal of Statistics*, Vol. 35, No. 3, pp. 479
- Omer, M. (2018). Estimating Elasticity of Transport Fuel Demand in Pakistan, SBP Working Paper Series No. 96, State Bank of Pakistan
- Parker, M. (2016). The Impact of Disasters on Inflation, ECB Working Paper Series No. 1982, European Central Bank
- Pasha, H.A. et al. (1995). What Explains the Current High Rate of Inflation in Pakistan? Vol. 34: 4 Part III, pp. 927–943, *The Pakistan Development Review*
- Pasha, H.A. et al. (2002). The Slowing Down of the Growth of Total Factor Productivity in Pakistan, Social Policy and Development Centre
- Patra, M. D. & Ray, P. (2010). Inflation Expectations and Monetary Policy in India: An Empirical Exploration, Working Paper 10/84, International Monetary Fund
- PCoP (2011). Framework for Economic Growth, Ministry of Planning, Development and Special Initiatives, Planning Commission of Pakistan
- Przybyla, M. & Roma, M. (2005). Does Product Market Competition Recue Inflation? Evidence from EU Countries and Sectors, ECB Working Paper No. 453, European Central Bank
- Rana, A.W. (2020). Rationalization of Wheat Markets in Pakistan: Policy Options. PACE Policy Research Paper. International Food Policy Research Institute.
- Rana, W. et al. (2022). Seed System of Pakistan: Policy Challenges and Prospect, International Food Policy Research Institute – Pakistan
- Raza, B. & Mughal, K. S. (2022). Fiscal Determinants of Inflation in Pakistan, SBP Working Paper Series No. 108, State Bank of Pakistan
- Rogoff, K. (2003). Globalization and Global Disinflation, Paper, IMF News Article, Available at: [www.imf.org/en/News/Articles/2015/09/28/04/53/s082903](http://www.imf.org/en/News/Articles/2015/09/28/04/53/s082903), Accessed on January 1, 2024
- Romer, D. (1993). Openness and Inflation: Theory and Evidence, *The Quarterly Journal of Economics*, Vol. 108, No. 4
- Sabir, M. & Ahmed, Q. M. (2003). Macroeconomic Reforms and Total Factor Productivity Growth in Pakistan: An Empirical Analysis, Quebec: 56th International Atlantic Economic Conference
- Sachsida, A. et al. (2003). Does greater trade openness reduce inflation? Further evidence using panel data techniques, *Economic Letter*, Volume 81, pp. 315-319
- Saleem, H. et al. (2019). Innovation, Total Factor Productivity, and Economic Growth in Pakistan: A Policy Perspective, *Journal of Economic Structures*, Vol. 8, No. 1, pp. 1-18.
- Sarel, M. (1996). Nonlinear Effects of Inflation on Economic Growth. IMF Staff Papers, Vol. 43, No. 1, International Monetary Fund
- Sardar, N. & Hyder, Z. (2022). Does the source of the oil price shock matter for inflation in Pakistan: Implications for monetary policy, SBP Working Paper Series No. 110, State Bank of Pakistan
- Sattar, R. et al. (2012). Effectiveness of Exchange Rate in Pakistan: Causality Analysis, *Pak. J. Commer. Soc. Sci.*, Vol. 6, No. 1, pp. 83-96
- SBP (1974). Annual Performance Review FY1973-74, Karachi: State Bank of Pakistan.
- SBP (2007). Annual Performance Review FY2006-07, Karachi: State Bank of Pakistan
- SBP (2009). Annual Performance Review FY2008-09, Karachi: State Bank of Pakistan
- SBP (2011). Annual Performance Review FY2010-11, Karachi: State Bank of Pakistan.
- SBP (2014). Annual Performance Review FY2013-14, Karachi: State Bank of Pakistan
- SBP (2019). The State of Pakistan's Economy, Third Quarterly Report FY19, Karachi: State Bank of Pakistan
- SBP (2020).<sup>a</sup> The State of Pakistan's Economy, Second Quarterly Report FY19, Karachi: State Bank of Pakistan
- SBP (2020).<sup>b</sup> Annual Performance Review FY20, Karachi: State Bank of Pakistan
- SBP (2020).<sup>c</sup> The State of Pakistan's Economy, Annual Report FY20, Karachi: State Bank of Pakistan.
- SBP (2021). The State of Pakistan's Economy, Second Quarterly Report FY21, Karachi: State Bank of Pakistan
- SBP (2022).<sup>a</sup> The State of Pakistan's Economy, First Quarterly Report FY22, Karachi: State Bank of Pakistan,
- SBP (2022).<sup>b</sup> The State of Pakistan's Economy, Annual Report FY22, Karachi: State Bank of Pakistan

*State Bank of Pakistan Half Year Report 2023-2024*

---

- SBP (2023).<sup>a</sup> The State of Pakistan's Economy, Half Yearly Report FY23, Karachi: State Bank of Pakistan
- SBP (2023).<sup>b</sup> The State of Pakistan's Economy, Annual Report FY23, Karachi: State Bank of Pakistan
- SBP (2023).<sup>c</sup> SBP Strategic Plan 2023-2028. Karachi: SBP
- Schindler, J.W. et al. (2004). Is China "Exporting Deflation"? Board of Governors of the Federal Reserve System International Finance Discussion Papers Number 791
- Shakeel, A. (2023). Withholdingization of Taxation System: Beneficial or Not? 3RD RASTA Conference, Research for Social Transformation and Advancement, Pakistan Institute of Development Economics
- Sherani, S. (2006). Pakistan's Fiscal and Monetary System, Department of Economics, The Lahore School of Economics, *Lahore Journal of Economics*, Vol. 11, Special Edition, pp. 13-24
- Siddique, O. (2022). Total Factor Productivity and Economic Growth in Pakistan: A Five-Decade Overview, *The Pakistan Development Review*, Vol. 61, No. 4, pp. 583-601
- Siddique, O. et al. (2023). Sectoral Total Factor Productivity in Pakistan, Ministry of Planning, Development and Special Initiatives and Pakistan Institute of Development Economics
- Siddiqui, R. & Akhtar, N. (1999). The Impact of Changes in Exchange Rate on Prices: A Case Study of Pakistan, *The Pakistan Development Review* Vol. 38, No. 4, Part II, pp. 1059-1066
- Talpur, Z. et al. (2020). Impact of Floods on Vegetation Cover in the Sanghar District of Sindh, Pakistan. *Journal of Environ. Sci. Proc.*, Vol. 7, No. 5
- Tariq, K. et al. (2012). Domestic Debt and Inflationary Effects: An Evidence from Pakistan, *International Journal of Humanities and Social Science*, Vol. 2, No. 18
- UN (2020). Young Women in Pakistan - Status Report 2020 UN Women Pakistan, United Nations
- USDA (2022), Foreign Agricultural Service, Available at <https://fas.usda.gov/data>, Accessed on Feb 15, 2024
- Vinayagathan, T. (2013). Inflation and Economic Growth: A Dynamic Panel Threshold Analysis for Asian Economies, *Journal of Asian Economics*, Elsevier, Vol. 26, pp. 31-41
- WB (2018). Pakistan - Unlocking Private Sector Growth through Increased Trade and Investment Competitiveness, WB Technical Note, World Bank
- WB (2020). Climate Change Knowledge Portal, World Bank, Available at: <https://climateknowledgeportal.worldbank.org/country/pakistan/vulnerability>, Accessed on February 06, 2024
- WB (2022). From Swimming in Sand to High and Sustainable Growth. Pakistan's Country Economic Memorandum 2022, World Bank
- Yellen, J. (2005). The U.S. Economic Outlook, Presentation to the Stanford Institute of Economic Policy Research Stanford University, Available at <https://www.frbsf.org/news-and-media/speeches/yellen-speeches/2005/02/the-u-s-economic-outlook-palo-alto/>, Accessed on 6 Feb 2024
- Youssef, H. A. G. (2007). Towards Inflation Targeting in Egypt Fiscal and institutional reforms to support disinflation effort, Directorate-General for Economic and Financial Affairs, European Commission
- Zakaria, M. (2010). Openness and Inflation: Evidence from Time Series Data, *Doğuş Üniversitesi Dergisi*, Volume 11, Issue 2, pp. 313-32