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Episode Wise Cost of Disinflation and Climbing Public Debt in Pakistan

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Abstract

The output loss due to policy induced disinflation popularly known as 'sacrifice ratio' interpreted mechanically to declare success of a disinflationary episode may be misleading when public debt is rapidly rising. By using Ball and Mankiw (2002) methodology, this study has estimated sacrifice ratios for three identified disinflationary episodes in Pakistan during the period 1983-2025. The study has contributed in the existing literature by interpreting sacrifice ratios in the context of burgeoning public debt in Pakistan. The first (1995-2000) and third (2023-2025) episodes witnessed negative as compared to positive but low sacrifice ratio in the second (2011-2016) episode. The sacrifice ratio in the first episode (-0.72) is mechanically interpreted as 1 percentage point reduction in inflation lead to 0.72 percent reduction in accumulated real output loss. The sacrifice ratio (0.136) is interpreted as 1 percentage point decrease in inflation lead to 0.136 percent accumulated real output loss in the second episode. The sacrifice ratio in the third episode (-0.48) means that 1 percentage point decrease in

inflation rate has impact of 0.48 percent reduction in accumulated real output loss. The third disinflationary episode was quick but unsustainable as in FY2026 inflation returned by recording 7.05 percent rise in annual CPI mainly due to global supply shock. The study concludes that total public debt doubled rising from 1.5 trillion rupees to 3.17 trillion rupees during the first episode. Similarly, nearly doubled rising from 10.8 trillion rupees to 19.7 trillion rupees during the second episode, and rose from 62.9 trillion rupees to 80.5 trillion rupees during the third episode in just 03 years. These findings suggest that false sense of painless stabilization ignoring rapid debt accumulation causes disinflation unsustainable and short lived.

Keywords: Disinflation, Inflation, Sacrifice Ratio, Public Debt, NAIRU

1. Introduction

Price stability and achieving high economic growth are equally important but conflicting objectives of macroeconomic policy when policy induced disinflation causes output loss. Forgone output in fighting inflation is the concept commonly known as 'sacrifice ratio' originated from the Phillips Curve showing a trade-off between inflation and unemployment. Achieving disinflation through contractionary demand management policies is connected with the reduction in output and employment in all countries (Chadha et al., 1991). Sacrifice ratio is not a standalone metric to measure the cost of fighting inflation, but the recent and foundational research indicates that this cost is influenced by nature, speed and the duration of disinflation, and institutional framework of the economy (Ball 1994).

As far the speed of disinflation is concerned, existing empirical literature put a light on two opposing views. Traditional view (Gradualism) stated that if disinflation comes slowly, it will be less expensive, because the wages and prices have time to adjust to tighter policy. The opposing view (Sargent 1983; Ball 1994; Tetlow 2022) is that quick disinflation (Cold Turkey) is less expensive because the expectations adjust sharply. Ball (1994) calculated 65 disinflationary episodes across OECD countries. Ball's core finding is a cornerstone in monetary economics which indicates that the fast speed of disinflation decreases the sacrifice ratio. Swift actions of central bank truncate the duration of output contraction. This empirical finding supported by the rational expectation hypothesis by Sargent (1982); if there is a sudden regime change, inflation expectations quickly adjust downward and consequently inflation falls without a massive contraction in output. Taylor (1983) and Blanchard (1985) gave a counter

argument that even if a policy announcement is 100 percent credible and expectations are rational, the nominal rigidities (backward-looking) make a painless 'Cold Turkey' disinflation physically impossible.

Disinflations differ from one another depending upon the characteristics and behavior of economic variables during the substantial disinflations. Neely and Cole (2026) characterized the behavior of economic variables – financial, monetary, price, real output and labor market variables – which make some disinflations long-lasting or "successful disinflation" and some disinflations short-lived or "failed disinflation". The study makes a distinction between 'successful disinflation' and 'failed disinflation' by describing that if a trend inflation is kept 2 percentage point below the original level for at least 4 years, it is known as 'successful disinflation' otherwise it is 'failed disinflation'.

In most of the empirical literature it is found that large disinflations have accompanied with losses of output and employment in the major economies since 1950's (Blanchard et al., 2022; Cecchetti et al., 2023). The current study has analyzed disinflation not only inhered with sacrifices of output and employment but also accompanied by other cots in case of debt which is significantly entailed in Pakistan economy. High indebtedness and fiscal dominance mitigate the effectiveness of interest rate hikes and debt servicing may limit the success of disinflation. In Pakistan, it is generally claimed that fiscal imbalances played a vital role in explaining price fluctuations (Agha and Khan 2006).

Debt and inflation are connected with each other in different ways, debt and heavy government spending create a pressure for monetary adjustment of fiscal deficits. Monetization of fiscal deficit is generally considered the main cause of large inflation while fixing the fiscal problems is considered a key to disinflation (Sargent et al., 1980). Borrowing is a normal and necessary part of economic activity whether it is domestic or foreign. There are two types of indicators to measure the debt burden – (a) stock measures which relate the value of stock of debt to the annual level and (b) the flow measures which relate the value of annual debt service payments. The most widely used measure in Pakistan is to judge the stock of public debt (including external debt) as ratio to GDP (Parvez Hasan 1999). In the post-disinflation year the mean debt-to-GDP ratio increases very fast during unsuccessful / failed disinflation about 7 percentage points over the five quarters, while the debt-to-GDP ratio remains steady over the same period in successful disinflation (Neely and Cole 2026).

In the remaining part of the paper, section 2 presents review of recent literature focusing on studies conducted for Pakistan. Section 3 presents methodology and model specification and section 4 presents results of the study. Section 5 concludes the study based on the findings and section 6 provides limitations of the study.

2. Literature Review

To control the inflationary consequences when demand management tools are applied, the economy has to face some costs in terms of output loss (Ball, 1994) and rise in public debt and consistent fiscal imbalances. Monetary policy also controls the inflation from the supply side through expectation channel, but the economy has to face the costs of this disinflation in terms of output loss and increased volume of debt and debt servicing. The existing literature only discussed the output loss of disinflation but the increasing volume of debt is an important issue which is highlighted by this study. This study is going to address the most burning issue regarding Pakistan economy arguing that SR is not the only gauge to measure the cost of disinflation. In the current scenario it is necessary to take into account the debt burden and debt servicing as cost of disinflation which has become more problematic for the economic growth of the country. The low or negative sacrifice ratio literally interpreted as painless disinflation may be misleading when public debt is growing at alarming level approaching 84 trillion rupees in FY2026 indicating more than total net federal tax revenue going for interest payment on accumulated debt. Debt servicing is possible only through obtaining more debt thus loosening money supply and temporarily shifting pain to future. Thus success of disinflation should not only be gauged from episode wise output loss but also from duration of disinflationary episode, return of inflation and rise in indebtedness after each episode of disinflation. This study has a significant contribution in the existing literature for Pakistan and recommends important policy implications regarding the most burning issue of the economy.

A number of studies for different countries have estimated the sacrifice ratio as a cost of disinflation. Two key channels in driving sacrifice ratio are traditionally focused in the literature, which can be summarized as ‘intrinsic adjustment cost’ and ‘expectation adjustment cost’. ‘Intrinsic adjustment cost’ deals with sticky price and wages and may not vary with the modest change in the monetary policy. While, the ‘expectation adjustment cost’ is concerned with apprising prices and wages and may vary with the change in monetary policy and its credibility (Tetlow 2022).

Croushore (1992) evaluated the costs and benefits of disinflation. While discussing the benefits of disinflation, the study highlighted that one benefit is connected with reducing the distortion to saving and investment that is caused by the interaction of tax system with inflation. And the second benefit is connected with the increasing affordability of mortgage loans in the low inflationary environment, because the initial mortgage payments are lower. The study put a light on the costs of disinflation depending on the economic models used in the analysis. Classical models present low costs while the Keynesian models present the high costs. The reason is that in the classical models it is suggested that the economy quickly returns towards the full employment. While Keynesian models present the sluggish movement of prices and wages towards the higher employment.

Most of the studies conducted for USA examined the cost and benefit analysis of disinflation. Neely and Waller (1996) is one of these studies which examined the cost and benefit analysis of disinflation in U.S. economy. Ball (1994) methodology is used in this study to measure the cost of disinflation in terms of output loss and the benefit of disinflation is measured by Robert Barro (1995) method. The main idea of the benefit analysis of disinflation is that the reduction in inflation lead towards the efficient allocation of resources and better decision-making by consumers, workers and private investors, which leads to increase in total output and growth rate after disinflation. Kahn and Weiner (1990) also discussed the cost and benefit analysis of disinflation in U.S. economy. The study indicates that reduction in inflation enhances the long run potential growth of the economy. Cecchetti and Rich (2001) statistically investigated the properties of U.S. sacrifice ratio by applying three Structural VAR models and found the point estimates of sacrifice ratio that are consistent with the results of earlier studies. Gordon and King (1982) also estimated the sacrifice ratio for United States economy by employing traditional and Vector Auto regression technique.

There is vast empirical literature for other economies as well. Serju (2009) estimated sacrifice ratio by employing episode-specific methodology (non-parametric) by Ball (1994) and SVAR model (parametric) in Jamaica and Trinidad & Tobago. In addition, to analyze the sensitivity of inflation to the output gap, a non-linear modeling technique proposed by Filardo (1998) is applied in this study. This study calculates very low cost of disinflation in terms of output loss for Jamaica and Trinidad & Tobago. Yavuz (2002) estimated the sacrifice ratio for Turkey by applying episode-specific model. This study indicates that Turkey's disinflations are characterized by very low output loss and affected by positive supply shocks. Leitemo and

Roste (2003) also used VAR model to calculate sacrifice ratio before and after the induction of inflation targeting in six small open economies. The sacrifice ratio declined after the implementation of inflation targeting, which indicates that inflation targeting has increased monetary policy credibility.

Many empirical studies were also conducted to determine sacrifice ratio for Indian economy. Dholakia and Virinchi (2015) calculated the sacrifice ratio as a real cost of disinflation in Indian context not only in the short run but also in the long run. The study argues that in the contrary to global scenario, India has been among the few world economies fighting to cool down inflation and now the Indian economy has moved towards 'inflation targeting' in its monetary stance. There are other studies to measure sacrifice ratio for the fast developing economies like India (Kapur and Patra 2003; Durai and Ramachandran 2013; Dholakia 2014; and Mitra et al., 2014). Kapur and Patra (2003) explained that the magnitude of sacrifice ratio is declined with the shape of the Phillips Curve. A convex Phillips Curve represents the 'Cold Turkey' view, whereas the concave Phillips Curve represents the 'Gradualism'. Sharma and Mishra (2023) examined the sacrifice ratio for India by applying VAR and ARDL approaches and found that the sacrifice ratio is much less in India as compared to the sacrifice ratios for other advanced economies.

The empirical studies on the subject conducted for Pakistan include Bhatti and Qayyum (2016) estimating the sacrifice ratio and then dividing it into two main categories; 'Time Invariant' sacrifice ratio and 'Episode- Specific' sacrifice ratio. Time invariant sacrifice ratio can be determined by using Phillips Curve and SVAR methodology and episode- specific sacrifice ratio can be determined by using Ball (1994) methodology. The study indicates that sacrifice ratio is positive but its magnitude is low in Pakistan. Hussain and Nawaz (2017) tested the Roomer (1993) hypothesis of sacrifice ratio in Pakistan. The study found that the sacrifice ratio differs in highly persistent regime to low persistent regime. Sacrifice ratio is found positive in low persistent regime and negative in high persistent regime.

Khalid (2005) focused on inflation targeting as a better option for policy decision-making in Pakistan and consider that it is the main variable which can help to boost economic growth and exchange rate stability in recent low inflationary trend. Mangla and Hyder (2017) explored that monetary and fiscal authorities should coordinate in their decisions to anchor inflation expectations and to achieve high economic growth.

In case of Pakistan, there is need to conduct comprehensive study analyzing the role of demand management policies in controlling inflation when it is driven by supply side factors (Bashir and Jaffri, 2025). Further, disinflationary policies need to be declared successful not merely based on estimated low sacrifice ratio (output loss due to disinflation) but other side effects of disinflation need to be assessed as well. Particularly, recent studies have argued that in fighting supply-driven inflation with demand management tools is extremely expensive in terms of output and other costs. The study also found the theoretical background of the costs of disinflation and analyzes that a large number of empirical studies deal with the estimation of the sacrifice ratio in terms of output loss as a cost of disinflation, but advance research highlights that debt can be considered as a major cost of disinflation (Cochrane, 2022). This study aims to fill this gap by analyzing that the debt burden and debt servicing constitutes the major cost of disinflation in the case of Pakistan.

3. Methodology

This study has used the methodology given by Ball and Mankiw (2002) to calculate output loss in curbing inflation in three identified episodes of disinflation during the period 1983-2025. Ball (1994) identified the episode of disinflation as a peak and trough. A 'peak' is a quarter in which trend inflation is higher than in the previous four quarters and in the following four quarters, while a 'trough' is defined by an analogous comparison to four quarters on each side. At a trough the annual rate must be at least two percentage point lower than peak. In this study three identified episodes are: episode-I (1995-2000), episode-II (2011-2016) and episode-III (2023- 2025). Ball and Mankiw (2002) methodology involves following steps in the estimation of sacrifice ratio:

1. In the first step, the unemployment gap is calculated, which is defined as the difference of actual unemployment from NAIRU (Non Accelerating Inflation Rate of Unemployment). Phelps (1968) and Friedman (1968) developed the concept of NAIRU. NAIRU is actually the actual unemployment rate at which inflation rate neither accelerates nor decelerates. If the actual unemployment rate falls below the NAIRU, inflation rate moves upward and if the actual unemployment rate is above the NAIRU, the inflation rate tends to decrease. The unemployment gap is the most effective method to measure the spare capacity of the economy.

2. In the second step, episodes of disinflation are identified as a period in which inflation reduces substantially. These episodes are characterized by peak and trough in trend inflation (Ball 1994). First episode is identified for the period of 1995-2000 which shows the inflation rate is 13.02 % as a peak and 3.58 % as trough. The second episode ranges from 2011-2016 which shows the inflation rate 13.66% as a peak and 2.86 % as a trough. And the third episode is identified from the period of 2023-2025 which shows the inflation rate 29.18% as a peak and 5.6 % as a trough.
3. In the third step, output loss is calculated with the help of Okun's law[1] and then in the specific identified periods the accumulated output loss is calculated.
4. The last step involves the estimation of episode wise sacrifice ratio which is calculated by dividing the episode wise accumulated output loss by the change in inflation in that specific period.

4. Results and Discussions

Table1 presents the results of ADF test to check stationarity of the dependent and independent variables: inflation (INF) and unemployment rate (UR). UR is defined as the difference between actual unemployment rate and trend unemployment rate. The results in the table shows that both variables are stationary at level thus allowing use of OLS technique to estimate the slope of traditional Phillips curve.

Table 1: Augmented Dickey Fuller Test Results

Variables	**At Level**		**Decision Rule**
	With intercept	**With trend and intercept**	
INF	-4.4468(6)***	-4.8690(6)***	I(0)
UR	-3.8349(0)***	-3.7881(0)**	I(0)

Note: *** and ** indicate that the variable is stationary at 1% and 5% level of significance. Values in the parenthesis represent optimum lags selected through SBC.

The methodology given by Ball and Mankiw (2002) has been used in this study to estimate NAIRU. The first step of the calculation of NAIRU is to get the slope coefficient of UR by regressing it on INF. The slope coefficient (-1.27) is negative and significant at 10 % level of

[1] Okun (1978) postulated that due to 1 percent increase in unemployment, GDP is reduced by 2 percent.

significance. In the next step, we divide change in inflation by the estimated slope coefficient of Phillips curve and then add unemployment rate in this ratio and afterword apply HP filter on it to get the Time-Varying NAIRU.

Table 2: Long Run Estimates (Dependent Variable INF)

Variables	Coefficient	Std. Error	t-statistic	Prob.
C	4.1648***	0.9855	4.2258	0.0001
UR(-1)	-1.2705*	-1.7049	3.7593	0.0964
INF(-1)	0.4831***	0.0963	5.0147	0.0000
DUM	19.0238***	3.2516	5.8505	0.0000

*,**, and *** indicate significance of coefficients at 10 percent,5 percent and 1 percent level of significance.

Table 3 presents the results of diagnostic tests showing that there is no problem of serial correlation (LM test), and heteroscedasticity (ARCH test) at 5 % level of significance. Jarque-Bera test confirmed the normality of the residuals and Ramsey RESET test showed no evidence of model misspecification at 5 % level of significance.

Table 3: Diagnostic Tests

Jarque-Bera Histogram Test:	
F-Statistics (prob)	3.0582 (0.2167)
Bresch-Godfrey Serial Correlation LM Test:	
F-Statistics (prob)	1.0783 (0.3509)
Hetroskedasticity ARCH Test:	
F-Statistics (prob)	2.1587 (0.1298)
Ramsey RESET Test:	
F-Statistics (prob)	0.0135 (0.9078)

*,**, and *** indicate significance of coefficients at 10 percent,5 percent and 1 percent level of significance.

Source: Author's estimations

Okun (1978) estimated the steep cost of curbing inflation which is one of the early discussions in the concerned literature. In technical terms, sacrifice ratio for an episode is defined as:

$$\text{Sacrifice } Ratio = \frac{Cummulated\ Loss\ in\ Real\ GDP}{Percentage\ Point\ Decrease\ in\ Inflation}$$

The output loss in fighting inflation accounts for the entire disinflationary episode which spans over several years rather than on single point. Ball (1994) specifically identified the period across different countries in different time periods as 'Disinflationary Episode'.

Using methodology given by Ball and Mankiw (2002) the sacrifice ratios in three identified episodes are discussed as follows. Episode-I is identified for the period of 1995-2000 which shows the inflation rate is 13.02 % as a peak and 3.58 % as trough. The second episode ranges from 2011-2016 which shows the inflation rate 13.66% as a peak and 2.86 % as a trough. And the third episode is identified from the period of 2023-2025 which shows the inflation rate 29.18% as a peak and 5.6 % as a trough. Figure 1 shows three identified disinflationary episodes and rebound of inflation after third episode (2023-2025) in FY 2026 recording 7.1 percent annual CPI inflation. In August FY 2027, YOY CPI inflation was recorded 11.1 percent clearly demonstrating disinflationary period was although quick but unsustainable.

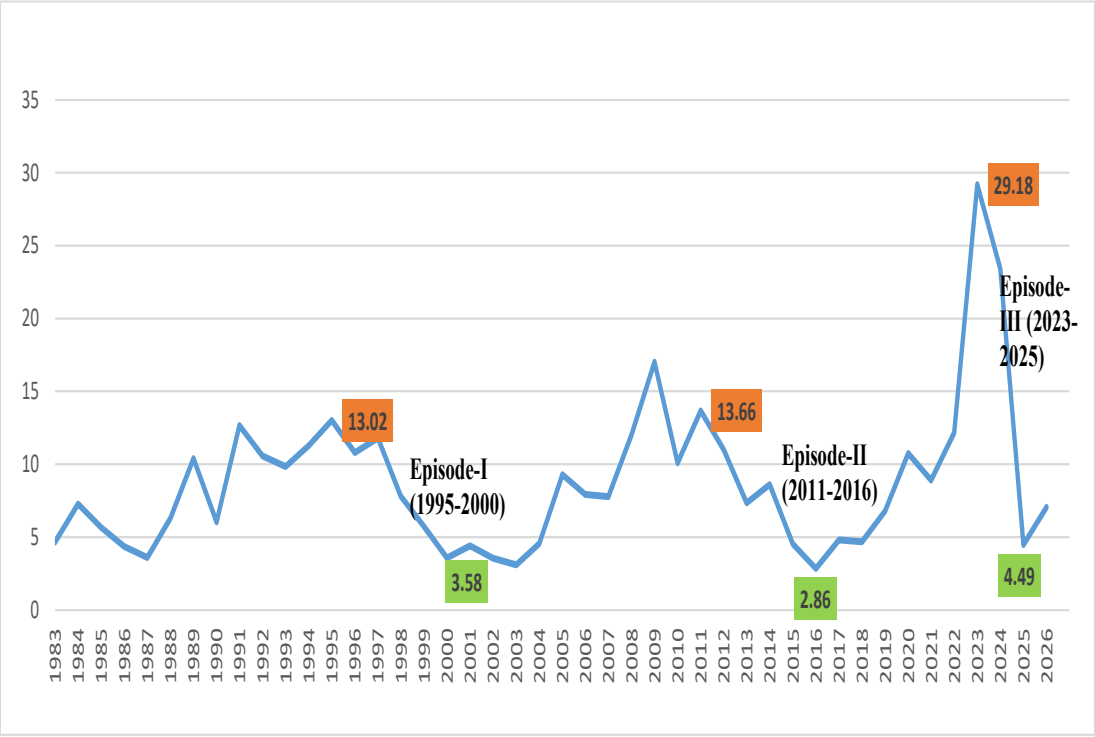


Figure 1: Identified Disinflationary Episodes in Pakistan

In the first episode (1995-2000), the accumulated output loss is -6.7880 % and the rate of disinflation is 9.44 percentage point and the sacrifice ratio in this episode is -0.72 which shows disinflation has no sacrifice in terms of output loss. The value -0.72 is interpreted as 1 percentage point reduction in inflation leads to 0.72 percent reduction in output loss. This negative sacrifice ratio is supported by (Basiri and Nahidi 2015; Zhang 2005).

The second episode (2011-2016) indicates that the accumulated output loss is 1.4723 % and the rate of disinflation is 10.8 percentage point and the sacrifice ratio in this period is 0.136. The positive but low sacrifice ratio identifies that 1 percentage point decrease in inflation lead to 0.136 percentage output loss tolerated by the economy. Haque and Jalil (2020) also found the positive sacrifice ratios in different episodes in the case of Pakistan.

In the third episode (2023-2025), the accumulated output loss is -11.4102% and the decline in inflation is 23.58 percentage point and the sacrifice ratio is -0.48. It means that 1 percentage point decrease in inflation rate has a 0.48 percent reduction in output loss during the episode.

Apparently, negative or low sacrifice ratio may indicate credibility of monetary policy in controlling inflation. However, recent studies argue that only on the basis of low or negative sacrifice ratio a disinflationary episode may not be recognized as successful by ignoring other side effects. Particularly, disinflationary cost in terms of debt accumulation due to interest hike and associated rise in debt servicing need to be accounted.

4.1. Debt Accumulation in Disinflationary Episodes in Pakistan

A disinflationary strategy by the central bank, which depends solely on interest rate spikes can pose a challenge for debt dynamics (International Monetary Fund, April 2023). Inflation is considered purely a fiscal phenomenon and fiscal constraints make disinflation harder this time (Cochrane, 2022). Monetary disinflation in Pakistan is supported by fiscal constraints and fiscal cost on debt as examined the debt surge in Pakistan during the identified disinflationary episodes.

Recent literature highlighted that increasing real value of debt is considered as a major and primary cost of disinflation. The relationship between debt and disinflation manifests in two key channels: a) Debt Deflation Channel – when inflation rate reduces, it enhances the real value of nominal debt, squeezing borrowers and slowing down overall economic activity. Suppressed economic growth causes the Debt-to-GDP to spike making a country or businesses

look more heavily indebted; b) Interest Rate Channel – disinflation is traditionally achieved by interest rate hikes, if interest rate increases, it makes new government debt more expensive and increases the cost of servicing floating rate or newly rolled over debt (International Monetary Fund, April 2023).

In the following analysis, data reveals that 94.2 % of Pakistan's net revenue is allocated to debt servicing leaving marginal fiscal space for welfare and developmental projects (Policy Brief, Pakistan's Debt Crisis, 2025). Tables 4 shows negative sacrifice ratio using methodology of Ball (1994) means that disinflation put a little bit positive effect on output but it is accompanied with doubling of public debt during the episode and enormous increase in Debt to GDP and Unemployment rate. Because the economy was already fighting against the political instability and post-1998 nuclear test related sanctions and was operating below its potential. So there was not much growth left behind to fight against inflation and to sacrifice in the struggling economy.

This disinflation in Pakistan presents a macroeconomic paradox: it seems to be successful in cooling down CPI inflation, which covered around 13 % in 1995 to 3.6 % by the FY 2000. But it was an absolute failure regarding debt dynamics. Public debt increased from RS 1497 Billion in 1995 to RS 3172 Billion in FY 2000 recording 112 percent rise in absolute terms. Debt to GDP ratio also increased from 52.3percent to 61.7 percent. Monetary tightening and structural adjustment program under IMF framework had successfully achieved their basic mandate of cooling down inflation but the fiscal cost including rapid increase in public debt and the revenue drain in the form of debt servicing was shocking. In this disinflationary episode, policies performed effectively in bringing down inflation but at the cost of low investment and high debt servicing. Further, inflation after remaining below 5 percent for some years again reemerged and remained consistently above 5 percent for a decade from 2005 to 2014(**See Figure 1.1**).

Table 4: Sacrifice Ratio and Debt Accumulation in First Episode (1995-2000)

Years	Annual CPI Inflation	Output loss	Sacrifice Ratio	Debt (RS Billion)	Debt-to-GDP ratio (%)	UR (%)	Fiscal Deficit (%) of GDP

1995	13.02	-6.788	-0.719	1497	52.3	5.37	6.5
1996	10.79			1704	52.5	5.37	6.4
1997	11.8			1995	52.8	6.11	7.7
1998	7.81			2392	53.8	5.91	6.1
1999	5.74			2946	60.7	5.90	5.4
2000	3.58			3172	61.7	7.83	4.3

Source: *By Author (Data used from Economic Survey of Pakistan(Various Issues)*

Table 5 shows that the sacrifice ratio is positive and very low in the second identified disinflationary episode. In the early part of this era, SBP adopted more 'hawkish' monetary stance to anchor inflation expectations initially and then followed the easing as headline inflation dropped down. Fiscal consolidation was settled with the SBP policy stance. Pakistan successfully dropped down inflation without a massive reduction in economic growth. This era is known as "painless disinflation". The output gap was negative because the disinflation was generally from supply-side (cheaper imports) rather than from the demand-side (high interest rate).

In the second disinflationary episode, inflation had fallen from 13% in 2011 to historic low of 2.8% in 2015-16 described as a 'mixed bag' of evaluated public debt and debt servicing. It looks successful in plummeted cost of short-term debt servicing due to lower interest rate, but it was unsuccessful in decreasing the overall accumulation of debt and the public debt-to-GDP ratio increased significantly. Recent study supports the result that public debt-to-GDP ratio increases in unsuccessful or failed disinflation (Neely and Cole, 2026). It is observed that in 2016 public debt had doubled as compared to 2011 and debt to GDP ratio desecrated the 60% ceiling mandated ratio under Pakistan's Fiscal Responsibility and Debt Limitation Act (FRDLA) of 2005. In this period, fiscal deficit ranged between 4.6 to 8.8 percent of GDP. Another disappoint was that just after 2 years inflation returned above 5 percent and continued to rise approaching double digit in FY2000 before the start of COVID-19 supply shock.

Table 5: Sacrifice Ratio and Debt Accumulation in Second Episode (2011-2016)

Years	Annual CPI Inflation	Output loss	Sacrifice Ratio	Debt (RS Billion)	Debt-to-GDP ratio (%)	UR (%)	Fiscal Deficit (%) of GDP
2011	13.66	1.472	0.136	10771	55.1	5.95	6.5
2012	11.01			12697	57.3	5.95	8.8
2013	7.36			14292	58.3	6.24	8.2
2014	8.62			15991	57.8	6.00	5.5
2015	4.53			17380	57.9	5.90	5.3
2016	2.86			19677	60.8	5.87	4.6
Source: *By Author (Data used from Economic Survey of Pakistan(Various Issues)*							

Table 6 shows that the negative sacrifice ratio in third disinflationary episode in Pakistan was accompanied with negative and low growth years. The real GDP growth was recorded to (-0.21 %) in FY 2023, 2.63 % in FY 2024, 3.18 % in FY 2025 and 3.7% in FY2026. SBP Monetary Policy Report (August 2026) forecasted 3.5% to 4.5 % growth in FY2027. In highly indebted countries the sacrifice ratio framework does not describe the clear image of disinflationary costs because it ignores the supply side impact of reduced fiscal space. In Pakistan, fiscal consequences of tight monetary stance are more rigorous than output loss (Mahmood, 2025). Pakistan economy faces the 'interest payment trap' because the government sector is the primary borrower of banking sector.

This aggressive disinflation is seemed highly successful, national CPI inflation plummeted from the peak of 29.2% in FY2023 and 23.4% in FY2024 and rapidly flied down to an average 4.9 % in FY2025 before rising to 7.1% in FY2026. Despite bringing down inflation Pakistan's debt servicing cost is severely aggravated in the short-term. In 2014-15 debt servicing was about RS 781 billion which was less than 40% of FBR tax collection and this figure did not touch to trillions of rupees spent on debt servicing in coming years as FY 2025 debt servicing and interest payments were recorded RS 9.7 trillion, which is over 80% of FBR tax collection (Saeed, 2026). Debt servicing has become unsustainable and the inflation fighting tool worked better and seemed to be successful in bringing down inflation but it triggered an explosion in interest liabilities domestically.

Table 6: Sacrifice Ratio and Debt Accumulation in Third Episode (2023-2025)

Years	Annual CPI Inflation	Output loss	Sacrifice Ratio	Debt (RS Billion)	Debt-to-GDP ratio (%)	UR (%)	Fiscal Deficit (%) of GDP
2023	29.18	-11.410	-0.483	62881	75.2	-	7.8
2024	23.41			71246	67.8	-	6.8
2025	4.49			80518	70.7	7.1	5.4

Source: *By Author (Data used from Economic Survey of Pakistan(Various Issues)*

The above analysis shows that recent disinflationary episode was although quick in bringing inflation down from 29.18 percent in FY2023 to 4.49 percent in FY2025 with negative sacrifice ratio but declaring it a successful disinflation would be superficial analysis. Despite quick disinflation and negative sacrifice ratio following points need to be taken in account while calling it success or failure.

a. Figure 2 shows that YOY CPI inflation in May 2023 was 38 percent which was highest in the history of Pakistan. However, due to tight monetary policy inflation started declining and reached to just 0.3 percent in March 2025 and disinflation was claimed successful before that it rebounded mainly from supply shocks and crossed double digit in June 2026 surpassing SBP target range 5-7 percent. The Monetary Policy Statement (MPS) released on June 15, 2026 stated that inflation may remain in double digits for the next few months. Now policy makers and researchers are worried about economic consequences of unsuccessful disinflation.

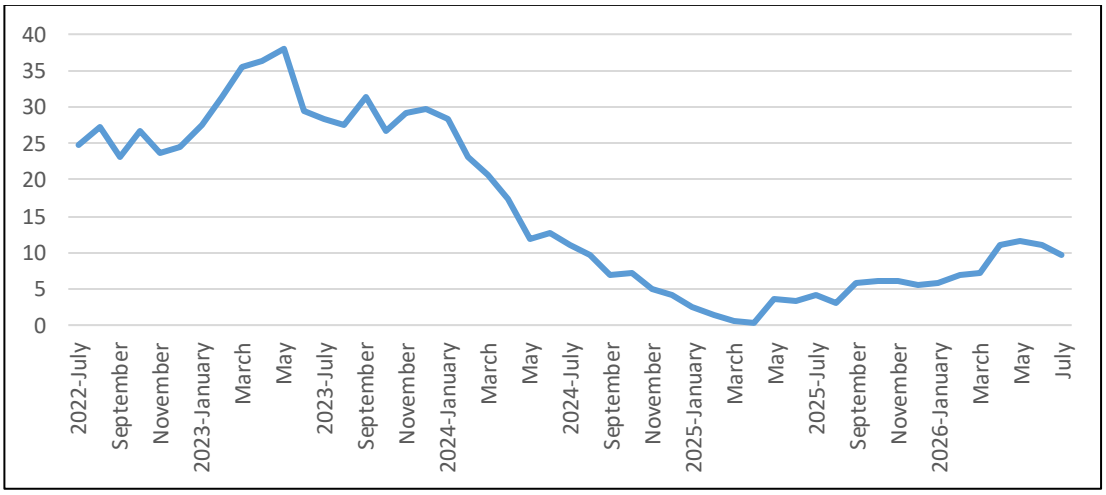


Figure 2: Monthly CPI Inflation(YOY) in Pakistan Since July 2023

Source: By Author (Data from State Bank of Pakistan)

b. The post disinflationary scenario shows alarming increase in public debt caused by rise in policy rate. The recent data shows that the debt of central government sharply increased from 55.02 trillion rupees in January 2023 to 81.95 trillion rupees in May 2026 thus recording 48.9 percent substantial increase. Further, domestic debt of central government increased from 34.34 trillion rupees in January 2023 to 58.11 trillion rupees in May 2026 recording 69.23 percent growth. On the other hand, external debt of central government showed slow increase from 20.69 trillion rupees in January 2023 to 23.84 trillion rupees in May, 2026. Figure 3 shows that public debt as percentage of GDP breached the ceiling set by Fiscal Responsibility and Debt Limitation Act 2005 (Amended in 2022).

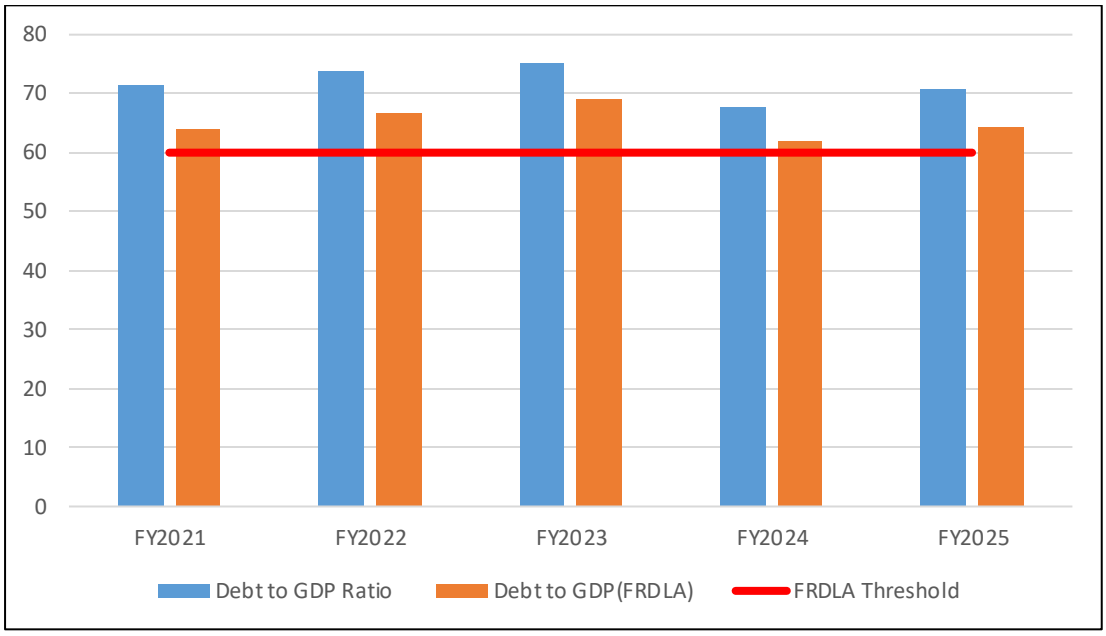


Figure 3: Public Debt to GDP Ratio and FRDLA Ceiling in Pakistan

c. In FY 2025, 8.887 trillion rupees were spent on markup payment from 11.14 trillion rupees FBR tax collection (75.67 percent share) and 15.814 trillion rupees federal government expenditure (56.2 percent share). In the coming years, the situation is worsening and government has to compromise on development and pro-growth activities to allocate huge portion of budget for debt servicing. In this scenario, option of tight monetary policy is squeezed. Figure 4 shows that in debt and liability servicing the share of interest payments has dramatically increased to 9.46 trillion rupees in FY2025 as compared to 2.83 trillion in FY2021. Now the government is just borrowing to pay interest on previously borrowed money and banks crowd out private banks to finance government thus again promoting

inflationary pressures. To break this vicious cycle, high and consistent real GDP growth is required which is not possible under given stabilization programs.

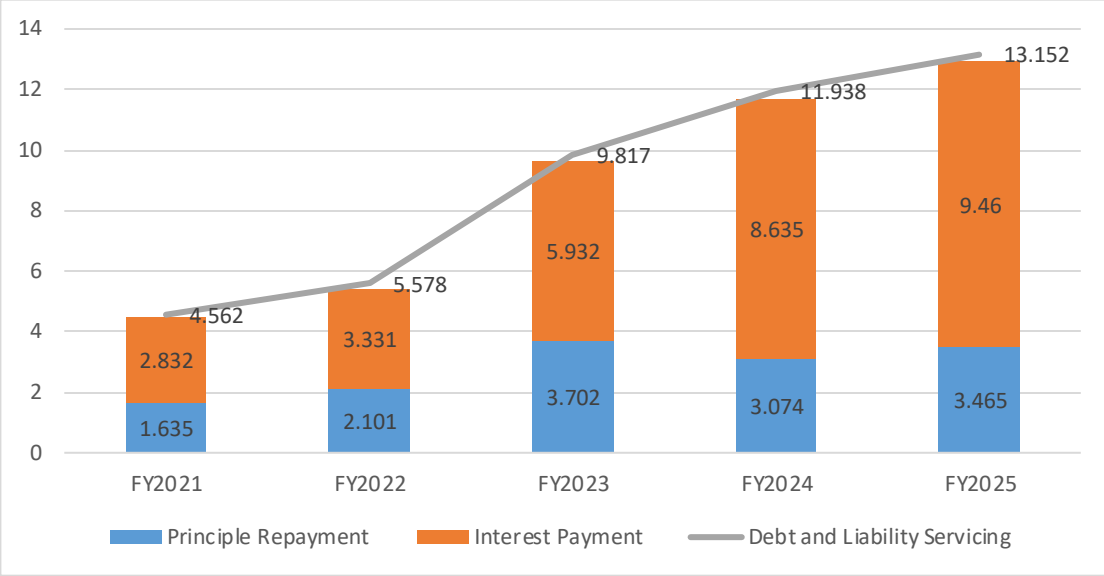


Figure 4: Debt and Liability Servicing Composition in Pakistan (Trillion rupees)

d. The unemployment rate in 2025 was recorded 7.1 percent and ongoing supply shocks originating from Gulf war and oil price hike have deteriorated employment opportunities for youth bulge. In this scenario, fiscal and monetary authorities may have conflicting priorities regarding further stabilization and pursuing growth. It is common understanding among researchers and policy makers that 3 million young people enter labor force of Pakistan annually. To provide job opportunities to new entrants in the labor market 8 to 10 percent growth is required. However, along with stabilization programs Pakistan has not been able to achieve even 05 percent growth. Figure 5 shows that after so called successful disinflation the growth prospects have blurred and inflation has returned due to global supply shocks. This has raised serious questions on applying tight policies in presence of dominant role of supply side drivers of inflation in Pakistan. However, SBP Monetary Policy Report, August, 2026 Box-2 explained why central banks respond to supply shocks when monetary policy is primarily a demand management tool justified SBP stance to control second round effect through tight monetary policy under supply side driven inflation.

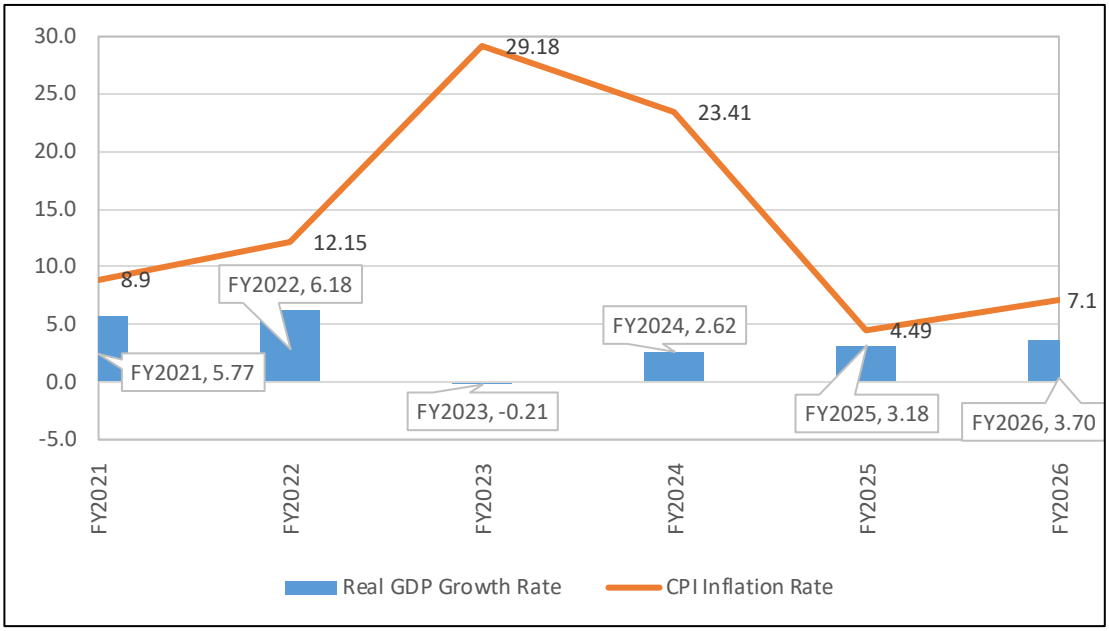


Figure 5: CPI inflation Rebound with Slow Growth in Pakistan (Percentage)

5. Conclusion

The study identified three episodes of disinflation in Pakistan during the data period of the study. The results indicated that disinflation either resulted output gains or low output loss. In the first episode, the sacrifice ratio was (**- 0.72**) interpreted as 1 percentage point reduction in inflation lead to 0.72 percent reduction in real output loss during 1995-2000. In the second episode, the sacrifice ratio **(0.136)** indicated that 1 percentage point decrease in inflation lead to 0.136 percent output loss in the economy. In the third episode, the sacrifice ratio **(-0.48)** means that 1 percentage point decrease in inflation rate had impact of 0.48 percent reduction in real output loss. Third disinflationary episode was quick but unsustainable as inflation rebounded in FY2026 recording 7.05 percent annual rise in CPI. This was mainly emanating from global supply shock caused by Gulf. Although SBP Monetary Policy Report (August, 2026) has forecasted 5.5 to 7.5 percent average CPI inflation in FY 2027 but in the first quarter FY2026-27, CPI inflation was in double digit against SBP target range 5-7 percent.

This study concludes that rational approach towards determining the episode wise cost of disinflation in Pakistan should not only measure loss in terms of real output but also accumulation of public debt. During the first episode, public debt doubled from Rs. 1.497 trillion to Rs. 3.172trillion in 5 years, during the second episode public debt doubled from Rs. 10.771 trillion to Rs. 19.677 trillion. Third disinflationary episode witnessed huge rise in total

public debt rising from Rs. 62.881 trillion in 2023 to Rs. 80.518 trillion in 2025. This figure has further heightened approaching Rs. 83.3 trillion in March 2026. The scope of enforcing tight monetary policy shrinks in presence of huge public debt and debt servicing. On fiscal front, major chunk of annual tax revenue is spent on debt servicing thus evaporating the fiscal space required for developmental expenditures.

6. Limitations of the Study

The major limitation of the study is unavailability of data for long period on several indicators and in some cases data is not regularly produced. In case of Pakistan, after 2021, data on aggregate national core CPI inflation is not publically available. Further, Labour Force survey data is not regularly produced by Pakistan Bureau of Statistics.

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