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Financial Sector Reforms and Inflation-Growth Nexus

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Abstract

In the 1980s, Pakistan's financial reforms reduced central bank borrowing, raising government debt and tax collection needs. In this context, the conventional approach to evaluating the costs and benefits of low inflation proves inadequate. The sacrifice ratio (SR) focuses on demand contraction's impact on economic activity and fails to capture the true costs of inflation by overlooking the supply-side effects of reduced fiscal space. This study re-evaluates the SR, accounting for both the demand contraction channel and the long-term supply side impact of diminished fiscal space. We hypothesize that the cumulative costs outweigh the long-term benefits of price stability. By incorporating fiscal space scenarios into the time-series model for SR estimation; our results indicate an SR approximately double that found in earlier studies. These findings highlight the importance of incorporating fiscal implications into monetary policy decisions to support sustainable economic growth.

Keywords: Sacrifice Ratio (SR), Fiscal Policy, Monetary Policy, Phillips Curve, Output

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Financial Sector Reforms and Inflation-Growth Nexus

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Contents

Abstract

In the 1980s, Pakistan's financial reforms reduced central bank borrowing, raising government debt and tax collection needs. In this context, the conventional approach to evaluating the costs and benefits of low inflation proves inadequate. The sacrifice ratio (SR) focuses on demand contraction's impact on economic activity and fails to capture the true costs of inflation by overlooking the supply-side effects of reduced fiscal space. This study re-evaluates the SR, accounting for both the demand contraction channel and the long-term supply side impact of diminished fiscal space. We hypothesize that the cumulative costs outweigh the long-term benefits of price stability. By incorporating fiscal space scenarios into the time-series model for SR estimation; our results indicate an SR approximately double that found in earlier studies. These findings highlight the importance of incorporating fiscal implications into monetary policy decisions to support sustainable economic growth.

Keywords: Sacrifice Ratio (SR), Fiscal Policy, Monetary Policy, Phillips Curve, Output

Introduction

The task of controlling inflation in any nation is the responsibility of the Monetary Authority of the country. This tight or expansionary monetary policy brings some costs related to economic activity. According to Friedman (1976), the essential objective of monetary policy is to maintain a stable relationship between inflation and output. Low inflation has been considered a beneficial condition for the economy and it is also concluded that disinflation policies cause output losses. i.e., SR is significantly positive.

In the last thirty years, price stability has been the main objective of central banks all over the world, it has a crucial place in the monetary policy framework. To achieve price stability, central banks use different tools, in which inflation targeting is an important strategy for output stabilization. Price stability is a necessary condition for sustainable growth and employment opportunities. According to empirical literature, a low inflation rate is an

important determinant of long-run growth and minimum welfare loss (Okun, 1978). Because bringing inflation down to its normal value leads to short-run output losses (Ball, 1994), that's why it's crucial for the central bank to consider the trade-off between inflation and output, while formulating the monetary policy. The output losses are the opportunity cost of inflation targeting and that's why the policymaker is always keen to measure the cost of disinflation. So, it is important to calculate SR for effective monetary policy.

In the literature, various attempts are made by different authors for the estimation of SR. These attempts are classified into two major groups: Time-invariant SR (Cecchetti & Rich, 2001; Gordon & King, 1982 and Okun, 1978) and episode-specific method (Zhang 2005 and Ball 1994). In Time invariant SR various methodologies like the Phillips Curve, structural vector autoregressive, and the new Keynesian Phillips curve are used to estimate the SR. Ball (1994) criticized Phillip's Curve approach on the basis that output and inflation trade-offs remain the same during the process of disinflation as well as during the process of accelerating inflation. He proposed a new methodology for the estimation of SR based on episode identification. Ball (1994) identified the disinflation episode by the trend inflation. After the identification of the disinflation episodes, Ball (1994) estimates the sum of the deviation of differences between actual output and potential (trend) output and then estimates SR associated with disinflation episodes. Ball (1994) assumed that potential output in disinflation episodes grows linearly. Secondly, Ball (1994) also assumed that at the beginning of the disinflationary episode, the output must be at its potential level and after deviation due to disinflationary policy, it goes back to its potential level four quarters after the termination of the disinflationary episodes. After 1994 the methodology proposed by Ball was adopted by many researchers whose objective was the estimation of the output cost of a disinflationary episode (Bernanke et al., 1999; Lunardelli & Nakane, 2019 & Caporale, 2008).

The limitation of Ball's methodology in terms of ignoring long-lived and persistent effects is criticized by Zhang (2005) that the cost of disinflation will be understated if long-lived effects are not taken into consideration while estimating SR. The assumption of Ball (1994) related to the potential output at the trough is relaxed by Zhang (2005). Ball (1997) argued that persistence effects or long-lived effects are much stronger than the standard assumptions of Ball. Hofstetter (2008) also followed the Zhang (2005) methodology, but he also considers inflation inertia.

These long-lived effects were analyzed by different researchers through the VAR methodology. Dolado and Lopez Salido (1996), Gereziher, & Nuru, (2021), Bhatti & Qayyum (2016) and Cetinkaya & Yavuz (2002), and Ikwor et al. (2024) checked the effects of Monetary shocks through the structural VAR for the economy and stated that these monetary shocks had long term costs for the economy. Cecchetti & Rich (2001) criticize the way Ball identifies the disinflation episode, which he assumes is because of contractionary monetary policy but he ignores the effects of other variables.

In the case of Pakistan, monetary tightening not only hurts economic activity through the traditional channel, it has fiscal consequences as well. Owing to financial sector reforms, monetary policy became market-based which resulted in a high cost of borrowing. This has fiscal consequences which in turn affect fiscal space and hence hampers long-run growth potential. The worth of this study is to estimate the fiscal consequences of disinflationary policy. To decrease inflation, the central bank will increase the interest rate, which will increase the cost of borrowing and ultimately debt burden. So, measuring SR through only the traditional methods as discussed above will underestimate the true cost of contractionary monetary policy, because in these the supply side effects of fiscal contraction are ignored. The inflation targeting policy increased the cost of borrowing both for the private sector and the government sector, which will affect long-term growth.

Keeping in view the empirical literature related to the methodology of SR and the importance of trade-offs between output and inflation in the monetary policy framework, This study calculates the sacrifice ratio (SR) by examining both how reduced demand and limited fiscal space affect the economy. We argue that the long-term gains from price stability are outweighed by the overall costs measured through these two channels.

Methodology

The existing literature on the estimation of SR cites different methodologies, which are discussed below. First methodology for SR from the monetary side is discussed and then the same from the fiscal side is explained.

Phillips Curve Methodology

The trade-off between output and inflation has been studied in the literature extensively, by the pioneer work of Okun (1978) and Gordon and King (1982). The measurement of SR is based on expectations augmented Phillips Curve.

$$(Y_t - Y_t^p) = \propto (\pi_t - \pi_{t-1}) + u_t \qquad (1)$$

Where , Y_t^p and π measure actual output, potential output, and inflation rate and ∝ measure the cost of disinflation.

Ball's Methodology

The disadvantage associated with Phillips's curve methodology is that the SR estimated remains the same within the disinflation episode as well as within the inflationary situation (Ball, 1994). Ball's (1994) methodology is based on the identification of disinflationary episodes. Ball (1994) defines SR as:

$$SR = \frac{\sum_{t=s}^{E+1}(Y_t - Y_t^p)}{\pi_t - \pi_{t-1}} \qquad (2)$$

In equation 2, the numerator measures the sum of the difference between the actual output and potential level of output during disinflationary episodes and the denominator measures the change in inflation rate at the start and end of the disinflation episode. Following the work of Ball for the identification of disinflationary episodes this study brings a little bit of change in the definition of trend inflation because here the data available is in annual format. For episodes' identification, we define trend inflation "t" as a centered three-year moving average between t-1 and t+1. The study identified a disinflation episode with inflation peaks and inflation troughs. An inflation peak is a point where the trend inflation at time period t is at a higher level as compared to the trend inflation at time period t-1 and at time period t+1. An inflation trough is the point where the trend inflation at time period t is lower than the trend inflation at time period t-1 and time period t+1. The disinflation episodes are the episodes that begin with peak inflation and end with trough inflation. And the trend inflation in disinflation episodes decreases by at least 1.5 percent.

The next is the calculation of the potential output which is the most elusive issue. Because a very little difference in fitted trends can cause very huge differences for the SR. Ball (1994) defines the potential level of output based on the given assumption: i.e., at the inflation peak the output is to be assumed at a potential level, and after the four quarters of inflation trough output is to be assumed to return to its natural level. When the trend output and actual output are equal between the two points, the trend output is assumed to grow linearly. Geometrically, trend output is the straight line connecting these two points (Ball, 1994; Partow et al, 1998; and Jordan & Thomas, 1997). The first assumption stated that the inflation and potential level must be stable at the start of the episode. The second assumption states that there are no hysteresis effects which can cause a strong persistence effect. The hysteresis effects only occur when disinflation and contractionary monetary policy affect the potential output permanently. Ball (1994) assumes that trend output is at its potential level during the disinflation episode. The trend output grows log linearly in the disinflation episode.

Zhang Methodology

The third method was used by Zhang in 2005, the modified version of Ball (1994). Zhang (2005) criticizes Ball's methodology as it ignores the persistence and hysteresis effect when output comes back to its potential level after the disinflation episode. Through this approach, the HP filter of the real GDP was calculated. Then, the growth rate of the HP filter was calculated. Thirdly it is assumed that potential output grows at the rate found by the series of HP filters.

Structural VAR Methodology

The fourth methodology used for the determination of SR is the Structural VAR Methodology used by Cecchetti and Rich (2001) to calculate the SR. Ball's (1994) and Zhang's (2005) methodologies of SR do not identify the monetary policy shocks. Cecchetti and Rich's (2001) structural VAR methodology is appropriate to find the effect

of monetary policy on the output-inflation trade-off. This study used bivariate unrestricted VAR and to calculate the SR, the structural response functions are estimated for a log of GDP and inflation rate. It is assumed that, in the long run, aggregate demand shocks have no permanent effect on the level of output. The SR is calculated over a time horizon (τ), where the numerator measures the output loss and the denominator measures the difference in the level of inflation.

$$SR(\tau) = \frac{\sum_{j=0}^{\tau}\left(\frac{\partial y_{\tau+j}}{\partial \epsilon_t^{\pi}}\right)}{\left(\frac{\partial \pi_{t+\tau}}{\partial \epsilon_t^{\pi}}\right)} = \frac{\left(\sum_{i=0}^{\tau}\sum_{j}^{i} a_{12}^{i}\right)}{\left(\sum_{i=0}^{\tau} a_{22}^{i}\right)} \quad (3)$$

There are also limitations associated with this kind of methodology i.e., it is difficult to identify the shocks i.e., anticipated, and unanticipated shocks and restrictions due to theoretical constraints due the which results are not stable (Dar & Nain 2023, Jean-Jacques,2003 and Mohan & Verma, 2018). The data is taken from World Development Indicators for the period of 1960 to 2020. For the inflation rate, the study uses the GDP deflator and Consumer Price index with the base year 2015. For output, the real GDP with base year 2015 is used in log form and measured in million US dollars.

Methodology for SR from the Fiscal Side

As discussed above the prime objective of the monetary policy is price stability. And to bring inflation down by one percent, the central bank must increase the interest rate. This will increase the cost of borrowing and will shrink the capacity of borrowers i.e., public, and private, which will affect the potential of the economy. So, to calculate the effect of disinflation on output first the relationship between interest rate and inflation is estimated through the cumulative impulse response function by applying the structure VAR model. Based on this, the present value of the change in interest payment on domestic debt on floating rate and fixed rate for a period of 2022 to 2031 is calculated due to the change in interest rate because of one percent disinflation. The logic behind the selection of this period is that in 2031 almost all existing domestic debt will mature. Similarly, the change in the present value of domestic debt for the projected federal deficit is calculated from 2022-23 to 2031-32. Now to find the impact of this change in domestic debt on output, the government expenditure multiplier is calculated through the ordinary least square technique. After this, the present value of change in domestic debt is multiplied by the government expenditure multiplier and is divided by the nominal GDP of 2020-21 to calculate the SR from the supply side.

Identification of Disinflation Episodes

The first and the major step for the estimation of SR is the identification of disinflation episodes. For the identification of disinflationary episodes, peaks, and troughs were identified. The disinflation episode is the episode that begins with trend inflation peaks and terminates with trend inflation troughs. The study identified disinflationary episodes by utilizing annual data from Pakistan from 1961 to 2020. The study identified five disinflation episodes by utilizing annual inflation data of CPI through a centered three-year moving average as shown in Table 1. Based on the GDP deflator there are six disinflationary episodes as shown in Table 2. In both tables, the length of the episode is shown to be in the range of 3 years to 7 years. The maximum decline in trend inflation is almost 13.5 percent in the case of CPI and GDP deflator as shown in Table 1 and Table 2.

Table 1

Disinflation Episodes (Based on CPI)

Disinflation Episode	Start	End	Duration	Trend Inflation Decline
Episode I	1967	1970	3	3.49
Episode II	1975	1979	4	13.27
Episode III	1981	1987	6	5.65
Episode IV	1996	2003	7	5.65
Episode V	2010	2017	7	7.99

Table 2

Disinflation Episodes (Based on GDP deflator)

Disinflation Episode	Start	End	Duration	Trend Inflation Decline
Episode I	1967	1970	3	2.95
Episode II	1975	1980	5	11.00
Episode III	1982	1987	5	5.03
Episode IV	1993	1999	6	1.78
Episode V	2000	2003	3	11.16
Episode VI	2011	2018	7	13.42

Estimation of Sacrifice Ratio

After identification of the disinflationary episodes the next step was the measurement of SR by three methods. The first method is the one used by Ball in 1994. The trend output grows log linearly in the disinflation episode. The output loss is calculated by taking the summation of the difference between the potential level of output and the actual level of output as explained in Ball's methodology. The SR for annual GDP data is obtained for all disinflationary episodes in Pakistan identified through CPI and GDP deflators. The results of SR measured through Ball's method are given in Table 3. The table shows that SR is different and positive in all episodes with reasonable magnitude. The average value of SR for all episodes is 3.22 using CPI and 2.41 using the GDP deflator for episode identification. According to Table 3, a one percent reduction in inflation leads to a 2.41 to 3.22 percent fall in the real GDP.

Table 3

SR in Pakistan using Ball's Method

Disinflation Episode	Sacrifice ratio	
	Using CPI	Using GDP deflator
Episode I	1.35	1.60
Episode II	1.83	0.84
Episode III	4.40	4.34
Episode IV	5.35	5.11
Episode V	3.16	1.49
Episode VI		1.06
Average	3.22	2.41

However, these findings are sensitive to the measurement of the potential value of output and real output loss. The most critical issue is the calculation of potential output as a small change in the fitted values of output can bring large differences in the SR.

The second method is used following Zhang (2005). This method includes the persistence and hysteresis effect, which is ignored by Ball's methodology. Zhang's method makes a flexible assumption that output can return time to its potential value after the trough because of the persistence effect.

Through this approach the HP filter of the real GDP was calculated through two parameters of 1600 and 16000, these are the most used smoothing parameter. Then, it is assumed that the potential GDP grows at the rate estimated at the start of the disinflation episode by the HP filter. This growth rate is used to estimate the potential output for the measurement of the output gap for SR. Table 4 shows the estimation of SR for Pakistan for all identified disinflation episodes through CPI and GDP deflator. According to Table 4, the value of SR measured through Zhang's method is greater than the SR measured through Ball's methods as shown in Table 3, because Ball's method underestimates the true cost of disinflation as it ignores the long-lived effect. Table 4 shows that the value of SR is different for all episodes, but it remains positive. The results show that on average the real GDP will decrease by 4.7 percent for the permanent decrease of one percent inflation rate.

Table 4

SR in Pakistan using Zhang's Method

Disinflation Episode	Sacrifice ratio			
	Using CPI		Using GDP deflator	
	HP filter 1600	HP filter 16000	HP filter 1600	HP filter 16000
Episode I	1.64	2.97	1.94	3.52
Episode II	4.21	4.17	5.83	5.73
Episode III	6.37	3.11	5.75	2.34
Episode IV	7.41	5.35	8.84	5.76
Episode V	3.83	5.83	2.92	2.51
Episode VI			2.75	4.57
Average	4.69	4.29	4.67	4.07

The results of Table 3 and Table 4 show that Ball's methodology and Zhang's methodology support each other because both show that disinflation is costly in all episodes. However, these methods do not allow to consider the effect of monetary policy effects in the calculation of SR. As already discussed in the methodology section the structural VAR model is used to focus on unanticipated monetary policy shocks for measuring SR (Cecchetti, 2001). Augmented dickey- fuller test shows that all variables (i.e., log of GDP, inflation rate measured through CPI and GDP deflator) are stationary at first difference. The order of integration of output and inflation is important for the identification and measurement of SR. The evidence of non-stationarity in the output and inflation allows us in the long run restrict the effects of aggregate demand and for the permanent shift in the inflation rate. According to Akaike and Schwarz criteria, the optimal lag length for our bivariate VAR model is 2. Table 5 presents the point estimates of SR at different time horizons. The SR represents the cumulative output loss to a one percent permanent decline in the inflation rate. The results in Table 5 show that the value of SR remains constant as the horizon increases. According to Table 5, a one percent permanent decrease in the inflation rate leads to a 0.525 percent output loss. The value of SR estimated through structural VAR methodology following Cecchetti's (2001) model is less than Ball's and Zhang's methodology as shown in Tables 3 and 4, but positive for all time horizons.

Table 5

SR using SVAR

Time Horizon	4	8	10	12	16	20	25	Average
SR	0.504	0.525	0.528	0.530	0.530	0.530	0.530	0.525

Fiscal Consequences of Disinflationary Policy

The above section only calculates the effects of contractionary monetary policy through a decrease in output mainly because of a change in aggregate demand. This way of measuring the cost of disinflation underestimates the decrease in output because of contractionary monetary policy because it only considers the short-run effects and ignores the long-run supply-side effects from the fiscal side. To decrease the inflation rate, the central bank uses contractionary monetary policy tools using mostly the interest rate. This increase in interest rate will increase the cost of borrowing both for the private and public sectors, the expected interest payment on domestic debt will increase, which will shrink the investment capabilities and will affect the potential level of output. So, to quantify the relationship between interest rate and inflation, accumulated impulse responses are estimated

through a vector autoregressive model for interest rate, inflation rate, and real GDP as shown in Table 6. According to Table 6, to decrease the inflation rate by one percentage point, the central bank has to increase the interest rate by 1.4 percent.

Table 6

Relationship between Interest Rate and Inflation

Period	D(CMR)	D(INF)	D(LGDP)	CMR/INF
1	1.934107	-0.88605	-0.00322	-1.40205%
2	1.540523	-0.03453	-0.01175	
3	1.394906	-0.33714	-0.01784	
4	0.989495	-0.65044	-0.02029	
5	1.004618	-0.83103	-0.02262	
6	0.894285	-1.02013	-0.02375	
7	0.771655	-1.16412	-0.02487	
8	0.700495	-1.27998	-0.02486	
9	0.641614	-1.33067	-0.0246	
10	0.628436	-1.37949	-0.02422	

So, to estimate the long-term supply-side consequences of fiscal contraction, the study estimated the effect of an increase in the interest rate on domestic debt due to a one percent decrease in the inflation rate. The data for domestic debt is taken from the Pakistan Ministry of Finance website. According to data, 60% of domestic debt is on a floating rate, while 40% is on a fixed rate with different maturity periods. The change in interest payment on domestic debt is calculated for a period of 2022 to 2031, because almost all domestic debt i.e., PKR 26,265 billion will mature in 2031. An 8% discounting factor is used to convert future value into present value. According to Table 7, the present value of change in interest payment on domestic debt with floating rate and fixed rate are PKR 178.31 billion and PKR 67.28 billion, respectively. So, the present value of the total change in interest payment on domestic debt is PKR 245.59 billion due to one present decrease in the inflation rate as shown in Table 7.

Table 7

Change in Interest Payment on Domestic Debt

Maturity Year	Interest Payment	Domestic Debt on Floating Rate	Domestic Debt on Fixed Rate	Change in Interest Payment on Domestic Debt with a Floating Rate	Change in Interest Payment on Domestic Debt with a Floating Rate	Present Value of Change in Interest Payment with Floating	Present Value of Change in Interest Payment with Fixed Rate
2022	2100	5520	3680	77.39		77.39	
2023	1200	1800	1200	25.24	16.82	23.37	15.58
2024	1000	1200	800	16.82	11.22	14.42	9.62
2025	800	1020	680	14.30	9.53	11.35	7.57
2026	500	960	640	13.46	8.97	9.89	6.60
2027	750	150	100	2.10	1.40	1.43	0.95
2028	700	120	80	1.68	1.12	1.06	0.71
2029	800	3720	2480	52.16	34.77	30.43	20.29
2030	100	960	640	13.46	8.97	7.27	4.85
2031	100	240	160	3.36	2.24	1.68	1.12
Total	8050	15690	10460			178.31	67.28
Present Value of Change in Domestic Debt due to increased Interest Payment						PKR 245.59	
Discount rate		0.08	di/dπ	1.4%		billion	

Similarly, the effect of the cost of disinflation on the federal deficit for the years 2022-23 and 2031-32 has been estimated. The projected value of fiscal deficit is taken from the Medium-Term Budget Strategy Paper 2021-22-2023-24 published by the Ministry of Finance, Pakistan. Based on the projected fiscal deficit as a percent of GDP i.e., 5.4%, and projected nominal GDP, the federal fiscal deficit for the period of 2024-25 to 2031-32 is calculated as shown in Table 8. As the government finances the budget deficit through domestic borrowing, the increase in interest rate (i.e., 1.4%), because of a one percent decrease in inflation rate will increase the present value of domestic debt by PKR 719.5 billion, which will further increase the fiscal burden as shown in table 8.

Table 8

Change in Borrowing Because of Projected Federal Deficit

Fiscal Year	Projected Nominal GDP	Projected Fiscal Deficit /GDP	Projected Fiscal Deficit	Change In DomesticDebt	Present Value of Change in Domestic Debton Projected Federal Deficit
2022-23	58810	6.1	3591	50.3	49.7
2023-24	65765	5.4	3525	49.4	48.1
2024-25	73657	5.4	3977	55.8	53.5
2025-26	82496	5.4	4454	62.5	59.1
2026-27	92395	5.4	4989	70.0	65.2
2027-28	103483	5.4	5588	78.3	72.1
2028-29	115900	5.4	6258	87.7	79.6
2029-30	129808	5.4	7009	98.3	87.9
2030-31	145385	5.4	7850	110.1	97.1
2031-32	162832	5.4	8792	123.3	107.3
Total					PKR 719.5
Growth Rate		12%	di/dπ	1.4%	Billion
Discount rate		8%			

Tables 7 and 8 show the supply-side cost of disinflation. According to the tables, the interest payment on existing domestic debt and domestic debt for the federal deficit increases many folds, which minimizes the benefit of price stability in the long run. As the cost of credit increases, it decreases the capacity of the government and private sector to invest in the real sector and ultimately affects the potential level of output.

Now to find the impact of the change in interest payment on existing domestic debt and on borrowing to finance the projected federal deficit from 2022-23 to 2031-32 on output, the government expenditure multiplier is calculated. For this, gross domestic product is regressed on government expenditure and other control variables i.e., trade openness, labor force, and gross capital formation. For sensitivity analysis, government expenditure is further decomposed into current and development expenditure. After the simulation, the final fiscal multiplier i.e., the government expenditure multiplier is found 2 in the case of Pakistan, as

shown in Table 9. The government expenditure multiplier is multiplied by a change in interest payment and domestic debt to calculate the change in output. To calculate the SR for the fiscal side the change in output is divided by nominal GDP. According to Table 9 the SR for the supply side is 4.44, which highlights the cost of disinflation from the supply side.

In Table 10 the SR calculated through different methods for the monetary side is added to the fiscal side, to find the overall impact of the cost of disinflation. It captures the effect of both traditional channels of the demand side and the long-term supply-side effect. The overall SR ranges from 1.58 to 5.58. It shows that for one percent disinflation, the output gap will increase from 1.58 to 5.58%. The SR estimated is many times greater than that found in the previous studies because the previous studies only consider the demand side effect i.e., short-run effects. Ignoring the effect of the supply side may lead to underestimation of the true cost of disinflationary policies of the central bank.

Table 9

SR of Fiscal Side

		Government Expenditure Multiplier	Change in Output	Nominal GDP 2021-22	SR of Fiscal Side
Present Value of Change in Interest Payment on Domestic Debt	PKR 245.59 Billion	2	491.18	46675	1.05
Present Value of Change in Domestic Debt on Projected Federal Deficit	PKR 719.5 Billion		1439		3.08
Total Change in Domestic Debt	PKR 965.09 Billion		1930.2		4.14

Table 10

Overall Sacrifice Ratio

Monetary Side SR		Fiscal Side SR			Overall SR		
Ball's Method	2.82	1.05	3.08	4.14	3.87	5.90	6.95
Zhang's Method	4.43				5.48	7.51	8.57
SVAR Method	0.53				1.58	3.61	4.66
Average					3.64	5.67	6.73

Conclusion

At present the challenge faced by the Central Banks of developing countries is to implement the best controlling contractionary policies to enjoy low output cost in the region. SR is estimated to check the impact of disinflationary policies on Output Growth. This study estimated SR through three different methods available in the literature. These different methods gave the same results, which support the assumptions of Ball (1994), Zhang (2001), and structural VAR methodology by Cecchetti (2001). The study concludes that SR is positive in the Pakistan Economy for all episodes in the case of all methods, however, the magnitude of SR n is sensitive to different methods. Furthermore, the study found that the change in interest payment on existing domestic debt and projected

federal deficit for the years 2022-23 and 2023-24 is significant and high and leads to the shrinking of fiscal space. The effect of disinflation on the demand side and supply side may offset the benefits of price stability. The study finds SR that is two times more as compared to previous studies. Our study implies that fiscal consequences of monetary policy must be considered before monetary policy decisions. The study suggests that disinflation brings significant output losses both in the short run and long run, so disinflation is not in favor of the economy. The analysis suggests that contractionary monetary policy has high welfare loss and comparatively large SR. We also suggest future research to estimate the benefits of price stability so that the benefit-cost ratio can be estimated for disinflationary policies.

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