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Fiscal Prioritisation and Budget Rigidity in Pakistan

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Abstract

The study analyses fiscal prioritisation and budget rigidity using panel data for 20 districts across the provinces of Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan, as well as Islamabad. The analysis is based on actual expenditure data taken from Pakistan's Financial Accounting and Budgeting System (FABS) for a period of five years (2020-2024). Sectoral expenditure shares in development and current spending are first compared across 20 districts, followed by a tier-wise comparison. The division of districts into three tiers is based on administrative status and population size. Fiscal prioritisation is analysed by first comparing development and current expenditures, then identifying the dominant functions (sectors) across both expenditure categories. Budget rigidity is analysed using fixed-effects panel regression as the baseline specification, while the main estimation results are obtained with the bias-corrected Least Squares Dummy Variable (LSDVC) estimator, with Anderson–Hsiao (1982) as the initial consistent estimator, where persistence is captured by one-year-lagged sector shares. Development-to-current actual expenditure ratio and expenditure per capita are used as controls. Furthermore, difference GMM estimation following Arellano and Bond (1991) is used as a robustness check. The results of the descriptive analysis showed a clear dominance of current expenditures, with exceptions on only three occasions. Furthermore, fiscal priorities within the development and current expenditures differ across tiers. Budget rigidity is also not uniform; rather, it appears to be specific to certain sectors. Overall, the findings suggest that broader reforms in fiscal planning and expenditure management may play an important role in improving budget flexibility.

Keywords: Public Finance, Fiscal Prioritisation, Budget Rigidity, Pakistan.
JEL Classification: H11, H61, H72.

I. Introduction

A nation's budget is a critical mechanism by which the government mobilises and allocates its financial resources to achieve social and economic objectives. In the framework of endogenous growth, Barro (1990, 1991) argues that the effect of government expenditures not only relies on its size but also on the composition of spending, and the efficiency of its allocation and execution. Unproductive expenditures will reduce

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Gross Domestic Product (GDP) growth rate, whereas expenditures that are productive have an ambiguous effect on growth rate, depending upon government behaviour and whether the expenditure ratio is above or below the optimal threshold.

A significant amount of literature focuses on the importance of public spending and its composition for economic growth. However, an equally important issue is how governments prioritise expenditures across sectors of the economy and how these priorities persist over time. But government budgets are often difficult to adjust due to administrative constraints, political pressures, institutional rules, and a large share of expenditures is directed towards recurrent spending. Therefore, the spending pattern provides insights into fiscal priorities and the persistence of expenditure allocation. Therefore, the study focuses on two related ideas, which are fiscal prioritisation and budget rigidity. Fiscal prioritisation refers to the allocation of resources within different expenditure functions, while budget rigidity refers to the persistence of these expenditure allocations across districts and over time.

These problems are quite relevant in developing nations where there is limited fiscal space and local and provincial governments assume a greater role in the delivery of services. Understanding fiscal prioritisation and its rigidity is imperative for assessing the efficiency of fiscal policy. In this context, Pakistan is an appropriate case. Pakistan has continued to face significant fiscal pressures in recent years which increases the importance of efficient allocation of public expenditure across provinces and districts. According to the Pakistan Economic Survey 2024–25, the total government expenditure reached Rs. 16.34 trillion during Jul–Mar FY2025. The share of current expenditure accounted for Rs. 14.59 trillion which substantially exceeds development expenditure of Rs. 1.54 trillion. Although the fiscal deficit has declined to 2.6 per cent of GDP however current expenditures dominates overall public spending which constraints the fiscal space available for development expenditures. In this fiscal environment, it becomes important to examine how public resources are allocated across provinces and districts.

The 18th Constitutional Amendment and the 7th National Finance Commission NFC Award expanded the role of provincial governments in expenditure management and development planning especially in key public service sectors. The provincial expenditures increased to Rs 5,341.2 billion during July March FY 2025 from Rs 4,366.9 billion last year. Current expenditures grew to Rs 4,079.1 billion during July-March FY 2025 from Rs 3,267.5 billion last year. On the other hand, development spending increased to 1,226.2 billion during July-March FY 2025 from Rs 887.9 billion last year. The escalation in both development and current expenditures underscores the importance of examining the expenditure prioritisation and budget rigidity across districts and sectors.

Despite the repeated reforms in public fiscal management, issues related to the consistent dominance of current spending, limited flexibility in the redistribution of resources to development functions, and sluggish adjustment of the budget to changing

local needs remain present. The available literature on Pakistan is mainly based on provincial or federal level data which provides limited information regarding changes in fiscal flexibility and spending priorities at district level.

The fiscal behaviour of districts may be influenced by varying sizes of population and administrative status. Therefore, the study divides the sample of 20 districts of Pakistan into three groups. Tier 1 includes the federal and provincial capitals. Tier 2 includes districts with a population greater than 2.5 million. Tier 3 includes districts with a population less than 2.5 million. This type of classification allows a systematic comparative analysis of fiscal prioritisation patterns and budget rigidity across different levels of the urban system.

The study examines both the functional expenditure composition and its persistence over time by using the district-level data of actual expenditure of five years (2020-2024) provided by Pakistan's Financial Accounting and Budgeting System (FABS). The empirical analysis consists of two steps. In the first step, descriptive techniques are applied to scrutinise fiscal prioritisation among districts and tiers, with special focus on distribution between current and development expenditures, and which major functional sector dominates within each spending category.

TABLE 1

Categorising Districts under Specified Tiers

Tier 1 Districts	Population	Tier 2 Districts	Population	Tier 3 Districts	Population
Karachi	20,382,881	Faisalabad	9,075,819	Hyderabad	2,432,540
Lahore	13,004,135	Gujranwala	5,959,750	D.I. Khan	1,829,811
Peshawar	4,758,762	Rawalpindi	6,118,911	Larkana	1,784,453
Quetta	2,595,492	Multan	5,362,305	Sukkar	1,639,897
Islamabad	2,363,863	Bahawalpur	4,284,964	Kech (Turbat)	1,060,931
		Sialkot	4,499,394	Khuzdar	997,214
		Gujrat	3,219,375		
		Sahiwal	2,881,811		
		Mardan	2,744,898		

Source: Population Census (PBS, 2023).

In the second step, budget rigidity is analysed by first applying fixed effects (FE) panel regression to estimate the baseline model with both district and year fixed effects. However, given the inclusion of lagged dependent variables and relatively small panel size, the main estimation method is bias-corrected Least Squares Dummy Variable (LSDVC) estimator using the Anderson–Hsiao (1982) estimator as the initial consistent estimator. Furthermore, difference GMM estimation following Arellano and Bond (1991) is used as a robustness check to examine the consistency of the results.

The regression model has expenditure shares of major sectors in development and current expenditures as dependent variables while values of their one-year lags are included as independent variables to capture persistence in expenditure allocation, reflecting relative rigidity. A positive and statistically significant coefficient of the lagged share shows persistence and relatively greater budget rigidity, whereas a negative and statistically significant coefficient suggests greater relative flexibility. Statistically insignificant coefficients indicate no detectable persistence in sectoral allocations. Development-to-current actual expenditure ratio and expenditure per capita are included as control variables.

Against this backdrop, the study addresses the following research questions:

1. What are the priorities of districts in Pakistan regarding public expenditures between current and development spending and between major functional categories, and how do these patterns vary across districts and tiers?
2. To what extent do shares of sectoral expenditures remain stable over time, reflecting persistence in expenditure allocation and relative budget rigidity and does this vary across districts and tiers?
3. Are development expenditures more flexible than current expenditures across different districts and tiers, or does relative budget rigidity persist uniformly across expenditure types?

This study seeks to contribute to literature on fiscal behaviour and budget rigidity by analysing district level patterns of expenditure in Pakistan as this area has received limited attention. It examines whether spending priorities, persistence of expenditure shares, and ability of adjusting budgets vary across districts by using administrative expenditure data and tier framework based on district administrative status and population. By focusing on district level, the study aims to extend the discussion on expenditure persistence that is largely focused on national and provincial levels in a developing country context.

The remainder of the paper is organized as follows. Section II presents the literature review, highlighting the theoretical and empirical studies relevant to the research topic. Section III describes the data sources, variables, and methodology employed in the analysis. Section IV provides the empirical analysis and discusses the main findings

and results. Section V outlines the limitations of the study and discusses their implications for the interpretation of the findings. Finally, Section VI concludes the paper by summarizing the key results, policy implications, and directions for future research.

II. Literature Review

This section reviews the literature on public expenditure and economic growth, with particular emphasis on the composition of public spending, budgetary allocation across sectors, and the persistence and relative rigidity of expenditure priorities over time. It also discusses institutional and political constraints that limit governments' ability to adjust spending patterns, thereby motivating this study's focus on fiscal prioritisation and budget rigidity at the subnational level.

1. Public Expenditure Composition and Economic Growth

Early contributions to the literature move beyond the aggregate size of government to examine how the composition of public expenditure affects economic performance. Devarajan et al. (1996) derive conditions under which changes in expenditure composition influence steady-state growth, depending on the productivity of expenditure components and their initial shares. Using data from 43 developing countries over two decades, they find that increases in the share of current expenditure are positively and significantly associated with growth, whereas increases in the share of capital expenditure are negatively associated with per capita growth. Their results suggest that expenditures deemed productive may become counterproductive when overextended, potentially leading to the misallocation of public resources in developing countries.

Similarly, Martins and Veiga (2014) examine the effects of government size and expenditure composition on economic development using a system-GMM approach for a panel of 156 countries over the period 1980–2010. Their results indicate that increasing the size of the government, past an optimal threshold, will have a negative influence on the outcomes of human development. The paper stresses that due to the constrained fiscal space, the priority of the governments should be the composition and the efficiency of expenditure as opposed to raising the level of expenditure. Particularly, increased health and education spending can improve the outcomes of development, as long as the efficiency of spending and population coverage is tackled.

Based on the data of 39 low-income countries during 1990s, Gupta et al. (2005) examine the association between fiscal consolidation, structure of expenditure, and growth. Their findings indicate that high fiscal positions typically have a positive relationship with the growth in the short and long-term. Furthermore, composition of expenditure is important. For nations that have greater shares of wage bill, they experience smaller growth, while focusing on capital and non-wage goods and services

facilitates faster growth of output. The relationship between growth and deficit appears to be influenced by initial fiscal conditions, highlighting the significance of sound management of expenditure.

More recent literature also reinforces the idea that various types of government spending have heterogeneous impacts on economic outcomes. Sosvilla-Rivero et al. (2025) applied ARDL panel model on the data of 29 European Union countries between 1995 and 2022 and established that elements of public expenditure have evident short and long-term impacts on the economic growth. Their findings support the idea that measures of aggregate spending mask significant functional variations in the growth effects.

In a similar context, according to Kneller et al., (1999) and Gemmell, et al. (2011, 2016), the effect of government spending on economic growth relies on the financing method and the kinds of goods and services that are financed. Their findings suggest that relocation of spending within the existing budget is as important as changing overall levels of expenditures. This idea is further reinforced in Paternostro et al. (2007) and states that development agencies aim to encourage economic development by using the composition of public expenditure as a policy tool.

In the case of Pakistan, the evidence emphasises the significance of the expenditure composition. Ali et al. (2013), with the help of application of ARDL model, studied the period 1972-2009 and concluded that development expenditure is positively related to economic growth, whereas current expenditure does not have significant contribution. They suggested contractionary fiscal expansion and their findings indicate necessity to decrease expenditures which are unproductive and increase mobilisation of resources.

2. Public Spending Priorities, Redistribution, and Subnational Governments

Beyond the overall public spending levels, the growth effects of spending are also influenced by the categories towards which government allocates resources. Alonso-Morales et al. (2025) used statistics of 103 large municipalities and provincial capitals and analysed municipal government spending and progression towards social Sustainable Development Goals in Spain. They found that better social outcomes are related to increased redirection of resources towards current transfers, human capital, and social services, along with favourable institutional arrangements like lower levels of debt and political competition. These findings underscore the significance of local fiscal prioritisation in meeting equity-based policy goals.

According to Dewan and Ettlinger (2009), public spending plays a vital role in supporting economic growth while also seeking to ensure that the resulting benefits are distributed broadly to improve living standards. The effectiveness of achieving objectives of economic growth is significantly influenced by comparative fiscal positions, allocation of resources across sectors, and spending levels of government. Allocations of public

spending towards certain categories are more conducive to stimulating growth and broad-based gains as compared to others. Examining the share of spending within total budget delivers insights into country's priorities across varying functions and purposes.

Jordan et al. (2017) examined the impact of economic conditions on budgetary priorities in the state government of Arkansas within the context of institutional framework developed by Arkansas Revenue Stabilisation Act. Their results indicate that incrementalism is the prevailing behaviour in budgeting, and priorities are generally maintained over time. Conversely, in periods of economic crises, spending on items of lower priority is subject to comparatively greater cuts, which implies uneven adjustments across expenditure types.

3. Budget Rigidity, Inflexibility, and Institutional Constraints

A parallel body of work focuses more directly on budget rigidity and spending inflexibility, highlighting the structural, institutional, and political restrictions placed on fiscal adjustment. Mattina et al. (2007) assess the flexibility and efficiency of public spending in Slovenia relative to other EU countries. They find that expenditure composition is heavily skewed toward nondiscretionary items, particularly in social protection, health, and education, limiting fiscal adjustment capacity. The study attributes inefficiencies to financing mechanisms, institutional arrangements, and poor targeting, and argues that greater flexibility is required to reallocate resources toward higher-priority and more efficient uses.

Echeverry et al. (2005) link budget rigidity to political economy dynamics, particularly the 'tragedy of the commons' in the budgetary process. They show that expenditure inflexibility, defined as the inability to reduce or eliminate transfers over time, leads to higher aggregate government spending and a persistent upward expenditure trajectory. Political fragmentation and conflict are identified as key drivers of such rigidity.

Cross-country evidence further illustrates systematic differences in governments' capacity to reallocate spending. Sebastian et al (2023), using COFOG data for 1996–2017, analyse reallocations of public spending across functions and identify substantial heterogeneity across countries. They discovered that governments that have stronger institutions and tighter fiscal regulations possess a larger capacity to reallocate. However, health and social security expenditures tend to be more difficult to cut in nominal terms. Despite the convergence observed in the spending patterns of the OECD countries, it is unbalanced, with significant outliers.

Clements et al. (2007) analysed the expenditure patterns from mid-1990s to 2006 in Latin America. They concluded that increasing primary expenditure, largely fuelled by current expenditure, especially social expenditures, has decreased fiscal flexibility. Spending continues to be procyclical and persistence of inefficiencies in public employment, public investment, and social expenditure, highlighting the chances to enhance the efficiency of expenditure and reallocate power.

4. Gaps in the Literature

Even though there is growing literature on expenditure composition and budget rigidity, some areas remain underexplored. To begin with, a significant part of the literature concentrates on aggregate data on the national level which provides limited knowledge regarding fiscal behaviour at subnational level especially in developing nations. Furthermore, there is comparatively much less work carried out with the purpose of assessing budget rigidity in terms of sectoral expenditure shares persistence despite the existing discussion on budget rigidity. Finally, little empirical research clearly analyses the variation in fiscal prioritisation and rigidity between urban levels or administrative tiers, where variations in size of population and governance duties may appear to influence budgetary behaviour.

This study seeks to address these gaps by using data of actual expenditure at the district level from Financial Accounting and Budgeting System (FABS) of Pakistan. It aims to analyse fiscal prioritisation and budget rigidity across the 20 districts that are divided into three tiers. By combining descriptive analysis with panel econometric techniques, it provides new subnational evidence on spending priorities across districts and how persistent they are over time.

III. Data and Methodology

The objective of this study is to investigate fiscal prioritisation and budget rigidity across 20 districts of Pakistan over five years (2020-2024). For fiscal prioritisation analysis, descriptive statistics are used. This technique involves constructing dummy variables that take the value 1 if the share of development expenditure (DE) exceeds the share of current expenditure (CE) in a given year and district, and 0 otherwise. Summary tables are generated using this binary indicator. This binary indicator is constructed only for descriptive comparison and is not included in the main regression analysis. These tables provide information on the frequency with which current or development expenditure dominates across years and districts, and on the pattern of fiscal prioritisation over a five-year period.

The data source for this study is the Financial Accounting and Budgeting System (FABS), Government of Pakistan.[1] The data contains actual annual expenditures and their distribution for 20 districts over five years (2020-2024). For the analysis, relevant data were extracted from the dataset and used to estimate various variables. The names and purpose of the variables are given in Table 2.

Actual expenditure is broadly classified into development (D) and current (C) expenditures, which are further organised across ten major functional sectors. These include General Public Service (GPS), Defence Affairs and Services (DAS), Public

[1] FABS is a comprehensive, SAP-ERP-based financial management system used by the Government of Pakistan to automate accounting, budgeting, and reporting across federal and provincial levels.

TABLE 2

List of Variables

List of Variables	Purpose
Sector Share	Descriptive Analysis
	Regression Analysis – Dependent Variable
Lag of Sector Share	Regression Analysis – Independent Variable
Expenditure Per Capita	Descriptive Analysis
	Regression Analysis – Control Variable
Development-to-Current Actual Expenditure Ratio	Descriptive Analysis
	Regression Analysis – Control Variable
YoY Percentage Change in Sum of Actual Expenditures	Descriptive Analysis

Source: Authors' estimation.

Order and Safety Affairs (POSA), Economic Affairs (EA), Environment Protection (EP), Housing and Community Amenities (HCA), Health (H), Recreation, Culture and Religion (RCR), Education Affairs and Services (EAS) and Social Protection (SP).

1. Measuring the Variables

Dewan and Ettlinger (2009) state that examining the share of spending in the total budget highlights the government's priorities towards particular functions relative to others. Therefore, in the first step, to analyse fiscal prioritisation between development and current expenditures, their sector shares are estimated using Formulas (1) and (2). These two variables provide information on the shares of development and current expenditures in the total of actual expenditures across all 20 districts over five years, respectively in Formula (1) and (2).

$$\text{Development Share}_{it} = \frac{SAE^{D}_{it}}{SAE_{it}} \tag{1}$$

$$\text{Current Share}_{it} = \frac{SAE^{C}_{it}}{SAE_{it}} \tag{2}$$

In the next step, the sector shares for the ten major sectors are calculated for both development and current expenditures using Formula (3) and (4). One-year lagged sectoral shares are generated to analyse persistence in allocation of expenditures and relative budget rigidity across fiscal years in Formula (3) and (4).

$$\text{SectorShare}^{D}_{i,t,s} = \frac{AE_{i,t,s}}{SAE^{D}_{it}} \quad (3)$$

$$\text{SectorShare}^{C}_{i,t,s} = \frac{AE_{i,t,s}}{SAE^{C}_{it}} \quad (4)$$

SAE_{it} = Sum of Actual Expenditure (Development + Current)
SAE^{D}_{it} = Sum of Actual Expenditure (Development)
SAE^{C}_{it} = Sum of Actual Expenditure (Current)
$AE_{i,t,s}$ = Actual Expenditure
i = District = 1, 2, ... , t = Year = 2020 ..... 2024 and s = sector

Dominant sectoral shares are identified by using sectoral shares at the district and tier level over a five-year period (2020-2024) for descriptive analysis.

Expenditure per capita is calculated for each district across five years using Formula (5). The population for each district is taken from the 7th Population and Housing Census. It is the first control variable in the regression analysis. Average Expenditure per capita is also estimated for descriptive analysis in Formula (5).

$$EXP\_CAPITA_{it} = \frac{SAE_{it}}{Population_{i,t=2023}} \quad (5)$$

The development-to-current actual expenditure ratio indicates the extent of development-oriented spending relative to current expenditure within a district's overall expenditures and is estimated using Formula (6). It is the second control variable in the regression analysis. The mean development-to-current-actual-expenditure ratio is also estimated for descriptive purposes in Formula (6).

$$DevoverCurrRatio_{it} = \frac{SAE^{D}_{it}}{SAE^{C}_{it}} \quad (6)$$

The YoY percentage change in the sum of actual expenditure measures the annual change in actual expenditures of 20 districts across five years (2020-2024). It is estimated using formula in Formula (7).

$$\text{YoY Percentage Change in Sum of Actural Expenditures}_{it} = \frac{(\text{New value}_{it} - \text{old Value}_{it})}{(\text{old Value}_{it})} \text{ x } 100 \quad (7)$$

2. Descriptive Analysis

Table 3 shows a pronounced and widening disparity in per capita public expenditure across the three tiers over 2020–2024. Tier 1 consistently accounts for the largest share of spending, rising sharply over the period, indicating a strong concentration of fiscal resources at the federal and provincial capitals. The growth of per capita spending of districts of Tier 3 is characterised by a constant and positive trend which indicates a steady increase in spending capacity although it remains much lower than districts of Tier 1. On the other hand, districts of Tier 2 have the lowest expenditure per capita that grows modestly and represents relatively constrained fiscal space. Overall, the trends indicate that spending is largely concentrated among Tier 1 districts. However, lower tiers, especially Tier 2, show limited growth in per capita public spending.

TABLE 3

Average Annual Expenditure per capita Across Three Tiers during 2020-2024 (PKR)

Tiers	2020	2021	2022	2023	2024	% Change
Tier 1	355,050	544,270	694,601	669,784	758,969	113.70%
Tier 2	10,225	12,124	14,515	15,253	21,283	108.10%
Tier 3	20,098	25,411	32,310	36,491	43,588	116.80%

Source: Authors' estimation.

The radar chart (Figure 1) highlights systematic variation in the composition of the development-to-current-expenditure ratio across district tiers, indicating the extent to which fiscal spending is oriented toward development rather than current expenditures. Tier 1 districts have comparatively higher development-to-current expenditure ratios. Lahore is the most development-oriented case, while Karachi is more moderate because of higher current expenditures. On the other hand, Tier 2 districts possess lower ratios which suggest dominance of current spending in their fiscal profiles. In the case of Tier 3, the trend is uneven with some of the peripheral districts focusing more on development spending, while others are strongly dependent on current expenditures. This trend is also reflected in the mean ratios of the three Tiers over the five-year period (2020-2024). Tier 1 and Tier 3 have almost equal mean ratios of 0.48 which indicates relatively greater emphasis on development expenditure while mean ratio of Tier 2 is 0.28 suggests relatively weaker focus on development spending.

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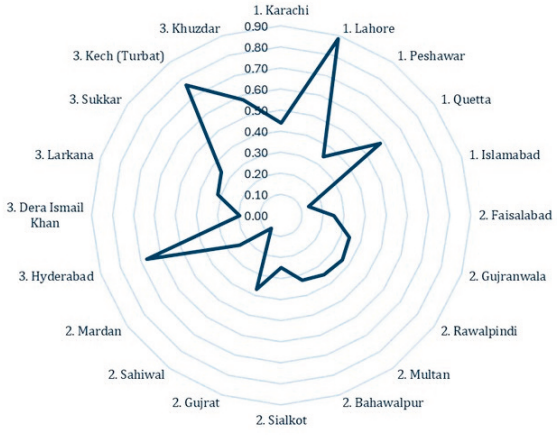

FIGURE 1

Development-to-Current-Expenditure Ratios across Districts (2020-2024)

because of higher current expenditures. On the other hand, Tier 2 districts possess lower ratios which suggest dominance of current spending in their fiscal profiles. In the case of Tier 3, the trend is uneven with some of the peripheral districts focusing more on development spending, while others are strongly dependent on current expenditures. This trend is also reflected in the mean ratios of the three Tiers over the five-year period (2020-2024). Tier 1 and Tier 3 have almost equal mean ratios of 0.48 which indicates relatively greater emphasis on development expenditure while mean ratio of Tier 2 is 0.28 suggests relatively weaker focus on development spending.

The year-on-year (YoY) percentage change in sum of actual expenditures (Table 4) suggests varying growth patterns and levels of volatility across five years (2020-2024). Tier 1 exhibits relatively stable and steady growth in actual expenditures despite a moderate slowdown in 2022. Even though there is a temporary decline in 2022, Tier 2 showcases largest volatility due to its steep rise in expenditure in 2023 which increases the average growth rate making it higher than the other two tiers.

TABLE 4

YoY (%) Change in the Sum of Actual Expenditures (2020-2024)

Tiers	2020	2021	2022	2023	2024	% Change
Tier 1	29%	24%	17%	35%	29%	26%
Tier 2	18%	21%	7%	63%	18%	27%
Tier 3	22%	27%	12%	28%	22%	22%

Source: Authors' estimation.

While Tier 3 represents more tempered and gradual increase over the years despite a slowdown in 2022. This points towards a smoother but relatively lower growth path of aggregate expenditure.

To analyse persistence in expenditure allocation and relative budget rigidity across districts, this study uses a panel dataset covering 20 districts over the period 2020–2024. Fixed effects (FE) panel regression is used to estimate the baseline model with both district and year fixed effects. This approach controls for unobserved differences across districts and over time. The regression equation for development (D) actual expenditure and current (C) actual expenditure is given below in Equation (1) and (2).

$$\text{SectorShare}^{D}_{i,t,s} = \alpha + \rho\ \text{SectorShare}^{D}_{i,t-1,s} + \beta_1\ \text{EXP\_CAPITA}_{it} + \beta_2\ \text{DevoverCurrRatio}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$\text{SectorShare}^{C}_{i,t,s} = \alpha + \rho\ \text{SectorShare}^{C}_{i,t-1,s} + \beta_1\ \text{EXP\_CAPITA}_{it} + \beta_2\ \text{DevoverCurrRatio}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

μ_i = *District Fixed Effects*
λ_t = *Year Fixed Effects*

The variable $\text{SectorShare}^{D}_{i,t,s}$ is the percentage sectoral share of the ten major functions (sectors) within the sum of actual development expenditure. It is estimated by dividing each sector's actual expenditure within the development expenditure domain by the total development expenditure.

The variable $\text{SectorShare}^{C}_{i,t,s}$ is the percentage sector share of the ten major functions (sectors) within the sum of actual current expenditure. It is estimated by dividing each sector's current expenditure by the total current expenditure.

The variable EXP_CAPITA_{it} is expenditure per capita, calculated by dividing the sum of each district's actual expenditure (development + current) for each year by its population. The variable $\text{DevoverCurrRatio}_{it}$ is a ratio calculated by dividing the actual development expenditure by the actual current expenditure for each district and year. Per capita expenditure and the development-to-current expenditure ratio are control variables in this study. The β_1 and β_2 are coefficients for the two control variables.

The variables $\text{SectorShare}^{D}_{i,t-1,s}$ and $\text{SectorShare}^{C}_{i,t-1,s}$ contain the one-year lagged values of sectoral shares. Its coefficient 'ρ' capture persistence in expenditure allocation which reflects relative budget rigidity. Lagged dependent variable allows the model to capture persistence in expenditure shares which reflects the dynamic nature of allocation of expenditures.

A positive and statistically significant ρ indicates persistence in expenditure allocation which reflects relative budget rigidity while a negative and statistically significant ρ indicates greater relative flexibility in reallocation. If coefficient is statistically insignificant then it indicates that there is no detectable persistence in sectoral allocations.

The empirical model is based on the idea that decisions regarding expenditure allocation may be influenced by past expenditure patterns, fiscal capacity, and the relative composition of development and current expenditures. Lagged sectoral expenditure shares capture persistence in expenditure allocation, while expenditure per capita and the development-to-current expenditure ratio account for differences in fiscal capacity and expenditure composition across districts.

However, as discovered by Nickell (1981), inclusion of the lagged dependent variable gives rise to the issue of endogeneity in the model due to its correlation with the error term which is called Nickell bias. This provides a basis for employing a GMM approach. However, the GMM estimators are subject to significant small-sample bias and instrument proliferation due to small cross-sectional and time dimensions of the dataset (N=14, T=5) of this study. The study by Bruno, (2005) strongly supported bias-corrected LSDV estimators when the number of individuals is small based on the bias and root mean squared error criteria. The Monte Carlo experiments performed in that study highlighted the preference of LSDVC estimators in comparison to the original LSDV and widely used IV and GMM consistent estimators.

Therefore, the main estimation method used in this study is bias-corrected Least Squares Dummy Variable (LSDVC) estimator using the Anderson and Hsiao (1982) estimator as the initial consistent estimator. The analysis uses difference GMM estimator following Arellano and Bond (1991) as a robustness check. The difference GMM estimates are accompanied by standard diagnostic tests which include the AR(2) test for second-order serial correlation and the Hansen test of over-identifying restrictions. According to Blundell and Bond (2023), this approach eliminates the unobserved firm specific fixed effects by taking first-differences and using as instruments the suitably lagged values of the dependent variable and of endogenous or predetermined explanatory variables.

IV. Empirical Analysis and Results

This section presents empirical findings on fiscal prioritisation and budget rigidity across 20 districts from 2020 to 2024, following a two-step approach. It begins by describing expenditure priorities through two measures: (i) the relative proportions of development versus current expenditures, and (ii) dominant functional sectors within each expenditure category across districts and tiers. Next, it analyses persistence in expenditure allocation and relative budget rigidity by using fixed effects (FE) panel regression as the baseline specification and is followed by the bias-corrected Least Squares Dummy Variable (LSDVC) estimator as the main estimation method using the Anderson–Hsiao (AH) as the initial consistent estimator. Sectoral expenditure shares (within development and current spending) are regressed on their one-year lags. Higher lag coefficients indicate stronger persistence which reflects relatively greater budget rigidity. The estimations controls for per

capita expenditure and the development-to-current expenditure ratio. Results are also presented by tier as district size and administrative status can influence spending priorities and expenditure allocation patterns. Difference GMM estimation following Arellano and Bond (AB) is used as a robustness check.

1. Fiscal Prioritisation

An analysis of the prioritisation between development and current expenditure across districts shows that current expenditure consistently dominates development expenditure, with current spending exceeding development spending in 97 of 100 district–year observations. This suggests that a substantial share of district expenditures may be directed towards operational and routine administrative spending which leaves relatively less fiscal space for development expenditures across many districts. The development expenditure exceeds the current expenditure in only three cases. In Lahore, development exceeds current spending in the years 2022 and 2023, while in Kech (Turbat), this pattern is observed in the year 2024. This appears to indicate temporary increases in development activity rather than a sustained shift in spending priorities.

Figure 2 shows the sectors with the highest share of total development expenditure for each district across all three Tiers. In tier 1, the findings reveal that General Public Services (GPS) sector holds the highest share in Karachi, Lahore and Islamabad districts. This indicates that there might be relatively greater allocation of development expenditures towards administrative and governance-associated

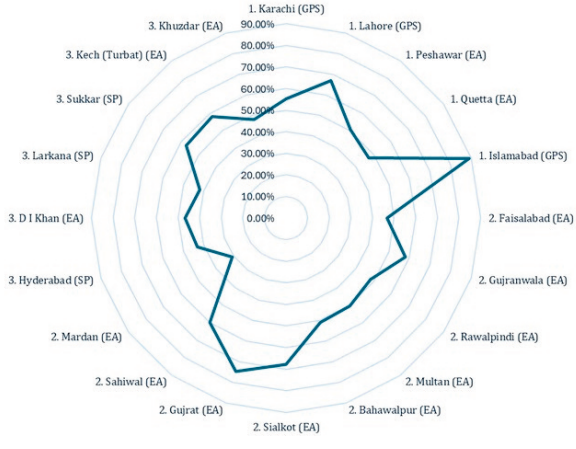

FIGURE 2

Dominant Sectoral Share within Development Expenditures across Districts (2020-2024)

functions in large metropolitan districts. Whereas, Economic Affairs (EA) has the highest share in districts of Peshawar and Quetta suggesting there may be relatively greater allocation towards infrastructure and other economic affairs-related expenditures. In contrast, all the districts of Tier 2 have Economic Affairs (EA) as the highest share within the development expenditure. This suggests districts of tier 2 may allocate relatively larger share towards Economic Affairs. There is a slight change in the trend across Tier 3 districts. Economic Affairs (EA) has the highest share in districts of Dera Ismail Khan, Khuzdar and Kech cum Turbat, whereas Social Protection (SP) dominates spending in Hyderabad, Sukkar, and Larkana. This suggests that development expenditure a priority varies across lower-tier districts with some districts may allocate relatively larger share towards Economic Affairs while others may place relatively greater emphasis on Social Protection.

In general, the figure suggests that higher-level metropolitan districts may be more likely to spend development resources on functions associated with governance and administration, intermediate districts might put more emphasis on investments in the economic affairs, and low-level districts have mixed priorities with partial focus on social protection.

Figure 3 shows the sectors that have the highest share in total current expenditure for each district of all three Tiers. The findings reveal that General Public Service (GPS) sector holds the highest share in all five districts within Tier 1. This implies that current spending in high-level metropolitan districts may be mostly directed towards administration and governance. The findings also show that Education Affairs and Services (EA&S) dominates current spending within most of the

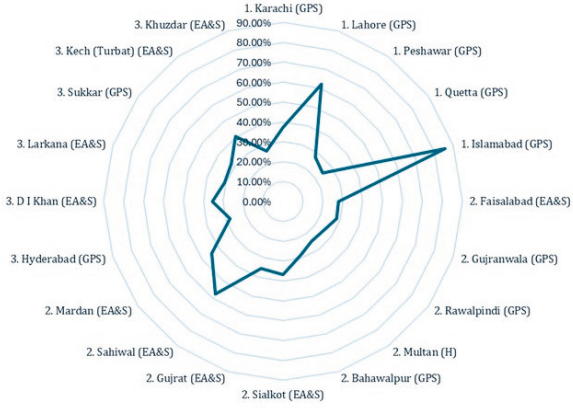

FIGURE 3

Dominant Sectoral Share within Current Expenditures across Districts (2020-2024)

districts of tier 2, which include Faisalabad, Sialkot, Gujrat, Sahiwal, and Mardan. However, General Public Service (GPS) has highest share within districts of Gujranwala, Rawalpindi, and Bahawalpur, while Multan's current expenditure is dominated by Health (H) sector. Within Tier 3, Education Affairs and Services (EA&S) has the highest share in districts of Dera Ismail Khan, Larkana, Kech cum Turbat, and Khuzdar. Whereas General Public Service (GPS) dominates current spending in Hyderabad and Sukkar. Overall, the spending priorities within the current expenditures vary across tiers.

2. Budget Rigidity

The analysis of budget rigidity is organised into two sections: first, examining persistence and relative rigidity across all districts separately within development and current expenditures; and second, assessing these patterns across the three tiers, again distinguishing between development and current expenditure components. Fixed effects (FE) is used as the baseline specification. This is followed by bias-corrected Least Squares Dummy Variable (LSDVC) estimators, with the Anderson–Hsiao (1982) as the initial estimator, used as the main estimation method to examine persistence in expenditure allocation which reflects relative budget rigidity across districts and tiers over the period 2020–2024. Difference GMM estimation following Arellano and Bond (1991) is used as a robustness check.

a) Budget Rigidity within Development Expenditures across Districts:

Table 5 reports the regression results within development expenditure across sectors using fixed effects and LSDVC (AH) estimators. The fixed effects (FE) estimates indicate that persistence in development expenditure shares vary across sectors. A positive and statistically significant persistence exists in Economic Affairs with value of 0.334 and is statistically significant at 5 per cent level and Social Protection with the value of 0.880 and is strongly significant 1 per cent level. Whereas Environment Protection and Health show negative and statistically significant coefficients with value of -0.180 and -0.244 respectively. This suggest greater flexibility in reallocation over time. The remaining sectors which include General Public Services, Defence Affairs and Services, Public Order and Safety Affairs, Housing and Community Amenities, Recreation, Culture and Religion, and Education Affairs and Services, do not exhibit statistically significant persistence, indicating no clear evidence of relative budget rigidity in these categories.

After applying the LSDVC estimator, persistence becomes more evident across several sectors. The positive and statistically significant coefficients of General Public Services (0.480), Public Order and Safety Affairs (0.475), Economic Affairs (0.342), Recreation, Culture and Religion (0.485), and Social Protection (1.174)

TABLE 5

Regression Results within Actual Development Expenditure (2020-2024) (*Continued*)

VARIABLES	-1 GPS (D) - FE	-1 GPS (D) - LSDVC	-2 DAS (D) - FE	-2 DAS (D) - LSDVC	-3 POSA (D) - FE	-3 POSA (D) - LSDVC	-4 EA (D) - FE	-4 EA (D) - LSDVC	-5 EP (D) - FE	-5 EP (D) - LSDVC
L. GPS (D)	0.16	0.480***								
	-0.103	-0.176								
L. DAS (D)			-0.0412	21.92***						
			-0.0348	-5.95E-05						
L. POSA (D)					-0.142	0.475**				
					-0.0962	-0.195				
L. EA (D)							0.334**	0.342*		
							-0.125	-0.184		
L. EP (D)									-0.180***	0.243
									-0.0265	-0.153
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	16.45***	-	0.0465***	-	0.915***	-	17.08*	-	3.218***	-
	-4.909		-0.00669		-0.241		-8.282		-0.741	
Observations	80	80	80	80	80	80	80	80	80	80
R-squared	0.195	-	0.686	-	0.103	-	0.199	-	0.126	-
No of Districts	20	20	20	20	20	20	20	20	20	20

Source: Authors' estimation.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 5

Regression Results within Actual Development Expenditure (2020-2024)

VARIABLES	-6 HCA (D) - FE	-6 HCA (D) - LSDVC	-7 H (D) - FE	-7 H (D) - LSDVC	-8 RCR (D) - FE	-8 RCR (D) - LSDVC	-9 EAS (D) - FE	-9 EAS (D) - LSDVC	-10 SP (D) - FE	-10 SP (D) - LSDVC
L. HCA (D)	0.0834	0.268								
	-0.13	-0.189								
L. H (D)			-0.244**	-0.0317						
			-0.109	-0.142						
L. RCR (D)					-0.0425	0.485***				
					-0.143	-0.187				
L. EAS (D)							-0.553	-0.553***		
							-0.402	-0.135		
L. SP (D)									0.880***	1.174***
									-0.137	-0.0935
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	10.82***	-	7.126***	-	1.956***	-	22.67**	-	2.407	-
	-2.543		-1.247		-0.248		-10.4		-1.858	
Observations	80	80	80	80	80	80	80	80	80	80
R-squared	0.032	-	0.154	-	0.166	-	0.144	-	0.593	-
No of Districts	20	20	20	20	20	20	20	20	20	20

Source: Authors' estimation.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

indicate persistence in expenditure allocation, reflecting relative budget rigidity in these sectors. In contrast, Education Affairs and Services show a negative and statistically significant coefficient (-0.553) which suggests greater flexibility in allocation. The coefficient of Defence Affairs and Services is positive and statistically significant, but it should be interpreted with caution because only Islamabad reports spending under this head in development expenditures. All other districts report no expenditure under this sector. The remaining sectors do not exhibit statistically significant persistence after bias correction. Overall, the LSDVC results provide evidence of relative budget rigidity in several key development sectors as persistence is observed in these categories.

b) Budget Rigidity within Current Expenditures across Districts:

Table 6 reports the regression results within current expenditure across sectors using fixed effects and LSDVC (AH) estimators. The fixed effects results indicate mixed evidence of persistence across sectors. The coefficient of the lagged share of Public Order and Safety Affairs is positive with the value of 0.602 and is statistically significant at 1 per cent level which suggests persistence in expenditure allocation and some degree of relative budget rigidity. In contrast, the coefficients of the lagged share of Defence Affairs & Services (-0.139) and Housing and Community Amenities (-0.481) is negative and statistically significant which indicates greater allocative flexibility. The lagged coefficients show statistically insignificant values in remaining sectors.

After applying the LSDVC estimator, a clearer pattern of persistence is observed in several sectors. Public Order and Safety Affairs (0.865), Recreation, Culture and Religion (0.506), Education Affairs and Services (1.691), and Social Protection (0.291) show positive and statistically significant coefficients which suggests persistence in expenditure allocation reflecting relative budget rigidity in these sectors. The coefficient of Defence Affairs and Services is positive and significant, but it should be interpreted with caution as expenditures under this head are not reported by all districts within current expenditures. Similarly, the coefficient of Environment Protection is also positive and statistically significant, but it should be interpreted with caution due to missing expenditure values for some districts across multiple years. This can lead to uneven variation across the sample. In contrast, General Public Service (-0.437) and Housing and Community Amenities (-0.452) show negative and statistically significant coefficients which indicates greater flexibility in allocation. The remaining sectors do not exhibit statistically significant coefficient after bias correction. Overall, the LSDVC results suggest that persistence in current expenditure is more sector-specific, with evidence of relative budget rigidity in some categories alongside flexibility in others.

TABLE 6

Regression Results within Actual Current Expenditure (2020-2024) (*Continued*)

VARIABLES	(1) GPS (D) - FE	(1) GPS (D) - LSDVC	(2) DAS (D) - FE	(2) DAS (D) - LSDVC	(3) POSA (D) - FE	(3) POSA (D) - LSDVC	(4) EA (D) - FE	(4) EA (D) - LSDVC	(5) EP (D) - FE	(5) EP (D) - LSDVC
L. GPS (D)	-0.439	-0.437***								
	(0.516)	(0.143)								
L. DAS (D)			-0.139**	9.896***						
			(0.0611)	(0.000639)						
L. POSA (D)					0.602***	0.865***				
					(0.190)	(0.170)				
L. EA (D)							0.199	0.208		
							(0.287)	(0.180)		
L. EP (D)									-0.0417	64.09***
									(0.181)	(2.56E-06)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	41.06**	-	0.00422	-	3.393	-	7.514**	-	0.0511***	-
	(14.69)		(0.00349)		(3.198)		(3.194)		(0.00744)	
Observations	80	80	80	80	80	80	80	80	80	80
R-squared	0.22	-	0.086	-	0.196	-	0.085	-	0.090	-
No of Districts	20	20	20	20	20	20	20	20	20	20

Source: Authors' estimation.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 6

Regression Results within Actual Current Expenditure (2020-2024)

VARIABLES	(6) HCA (D) - FE	(6) HCA (D) - LSDVC	(7) H (D) - FE	(7) H (D) - LSDVC	(8) RCR (D) - FE	(8) RCR (D) - LSDVC	(9) EAS (D) - FE	(9) EAS (D) - LSDVC	(10) SP (D) - FE	(10) SP (D) - LSDVC
L. HCA (D)	-0.481***	-0.452***								
	(0.155)	(0.147)								
L. H (D)			0.168	0.256						
			(0.104)	(0.197)						
L. RCR (D)					0.16	0.506**				
					(0.159)	(0.240)				
L. EAS (D)							1.69	1.691***		
							(1.673)	(0.101)		
L. SP (D)									0.0903	0.291*
									(0.0618)	(0.152)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	2.592***	-	13.28***	-	0.459***	-	-17.74	-	1.104***	-
	(0.367)		(1.746)		(0.109)		(45.70)		(0.318)	
Observations	80	80	80	80	80	80	80	80	80	80
R-squared	0.177	-	0.301	-	0.101	-	0.194	-	0.216	-
No of Districts	20	20	20	20	20	20	20	20	20	20

Source: Authors' estimation.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

(i) Budget Rigidity within Development Expenditures across Tiers:

Table A-1 to A-3 (Appendix) present the results of fixed effects and LSDVC (AH) estimations within development expenditure across three tiers over the period 2020–2024. The fixed effects results for tier 1 (Table A-1 in Appendix) show mixed evidence of persistence across sectors. Education Affairs and Services and Social Protection show positive and statistically significant coefficients which suggests persistence in expenditure allocation, reflecting relative budget rigidity in these sectors. Conversely, Recreation, Culture and Religion and Economic Affairs show negative and statistically significant coefficients which indicates allocative flexibility over time. The remaining sectors do not have statistically significant coefficients under the FE estimation. After applying LSDVC estimator (Table A-1 in Appendix), Education Affairs and Services (1.172) and Social Protection (0.965) have positive and statistically significant coefficients which indicates persistent expenditure allocation patterns, suggesting relative budget rigidity in these sectors. Defence Affairs and Services also shows a positive and statistically significant coefficient. However, it should be interpreted with caution because only Islamabad reports spending under this head in development expenditures. The remaining sectors do not show statistically significant persistence after bias correction. The LSDVC results indicate that relative budget rigidity in Tier 1 districts is not widespread and is confined to selected sectors.

The fixed effects results for tier 2 (Table A-2 Appendix) show that coefficient of the lagged sector share of Recreation, Culture and Religion is positive and statistically significant which suggests persistence in expenditure allocation, reflecting relative budget rigidity. However, Public Order and Safety Affairs, Environment Protection and Health has negative and significant coefficients which suggests greater flexibility. Whereas coefficients of remaining sectoral shares are statistically insignificant indicating that there are no clear evidence of persistence. After accounting for bias using the LSDVC estimator (Table A-2 Appendix), persistence becomes more evident in several sectors. General Public Services, Public Order and Safety Affairs, Housing and Community Amenities, and Recreation, Culture and Religion show positive and statistically significant coefficients which indicates persistence in expenditure allocation patterns which reflects relative budget rigidity in these categories. In contrast, Education Affairs and Services show a negative and statistically significant coefficient which suggests greater flexibility in allocation. The remaining sectors do not exhibit statistically significant coefficients after bias correction. Defence Affairs and Services is excluded from interpretation as no district in Tier 2 reported expenditures under this head in development expenditure.

The fixed effects results for tier 3 (Table A-3 in Appendix) show that the coefficient of lagged share of Social Protection is positive and statistically significant which indicates persistence. Whereas General Public Service, Public Order and

Safety Affairs, and Environment Protection have negative and statistically significant coefficients which suggests greater allocative flexibility in these sectors. While coefficients of remaining sectoral shares are statistically insignificant indicating that there is no clear evidence of persistence. After addressing the bias by using the LSDVC estimator, only Social Protection remains positive and statistically significant which indicates persistence in expenditure allocation patterns, reflecting relative budget rigidity in this category. The remaining sectors do not show statistically significant coefficients. Defence Affairs and Services is excluded from interpretation as no district in Tier 3 reported expenditures under this head in development expenditure.

Taken together, the results across tiers indicate that relative budget rigidity in development expenditure varies across sectors and tiers. The pattern of persistence changes with some sectors becoming insignificant once bias is addressed. For tier 1, the negative and statistically significant coefficients for Economic Affairs and Recreation, Culture & Religion become statistically insignificant after bias correction. Furthermore, in tier 2, the negative and statistically significant coefficient of Environment Protection and Health become statistically insignificant after bias correction while in tier 3, the negative and statistically significant coefficient of General Public Service, Public Order and Safety Affairs, and Environment Protection become statistically insignificant after bias correction.

(ii) Budget Rigidity within Current Expenditures across Tiers:

Table A-4 to A-6 (Appendix) present the results of fixed effects and LSDVC (AH) estimations within current expenditure across three tiers over the period 2020–2024. The fixed effects results for tier 1 (Table A-4 in Appendix) show that the coefficients of lagged shares of Public Order and Safety Affairs and Social Protection are positive and statistically significant which suggests persistence in these expenditure categories. On the other hand, Housing and Community Amenities has a negative and statistically significant coefficient which indicates relatively higher allocative flexibility. The coefficient of lagged sector shares of remaining sectors are statistically insignificant which suggests no clear evidence of persistence. After accounting for bias using the LSDVC estimator, Public Order and Safety Affairs is positive and statistically significant (0.753) which indicates persistence in this sector. The coefficient of Environment Protection is also positive and statistically significant, but it should be interpreted with caution due to missing expenditure values for some districts across multiple years. The remaining sectors also do not exhibit statistically significant coefficients under the LSDVC estimates.

The fixed effects results for tier 2 (Table A-5 in Appendix) show that the coefficient of lagged sector share of Health is positive and statistically significant which indicates persistence in expenditure allocation, reflecting relative budget rigidity.

On the other hand, the coefficient of lagged sector share of Defence Affairs and Services, Housing and Community Amenities and Recreation, Culture and Religion have negative and statistically significant coefficients which indicates that expenditures are relatively more adjustable over time. While the remaining sectors do not exhibit statistically significant coefficients. After addressing the bias by using LSDVC, the coefficients of Public Order and Safety Affairs, Environment Protection, Health, and Education Affairs & Services are positive and statistically significant which indicates persistence in expenditure allocation, reflecting relative budget rigidity in these categories. The coefficient of Defence Affairs and Services is also positive and significant, but it should be interpreted with caution as expenditures under this sector are not reported by all districts within current expenditures. Conversely, General Public Service and Housing and Community Amenities have negative and statistically significant coefficient which suggests allocative flexibility. The remaining sectors also do not exhibit statistically significant coefficients under the LSDVC estimates.

The fixed effects results for tier 3 (Table A-6 in Appendix) shows that coefficients of lagged share of Public Order and Safety Affairs and Recreation, Culture and Religion are positive and statistically significant which suggests persistence in these expenditure categories. In contrast, Defence Affairs and Services and Social Protection show negative and statistically significant coefficients which indicates allocative flexibility in these categories. The remaining sectors do not have statistically significant coefficients under the FE estimation. After accounting for bias using the LSDVC estimator, General Public Service and Public Order and Safety Affairs have positive and statistically significant coefficients which indicates persistence in expenditure allocation, reflecting relative budget rigidity in these sectors. The coefficient of Defence Affairs and Services is positive and significant, but it should be interpreted with caution as expenditures under this head are not reported by all districts within current expenditures. Similarly, the coefficient of Environment Protection is also positive and statistically significant, but it should be interpreted with caution as well due to missing expenditure values for some districts across multiple years. The remaining sectors do not exhibit statistically significant coefficients.

Overall, the findings suggest that patterns of persistence in current expenditure are uneven and differ across expenditure categories and tiers. Some sectors lose statistical significance after bias correction. In tier 1, the positive and statistically significant coefficient for Social Protection and the negative and statistically significant coefficient for Housing and Community Amenities becomes statistically insignificant after bias correction. Moreover, in tier 2, the negative and statistically significant coefficient of Recreation, Culture & Religion become statistically insignificant after bias correction. In tier 3, the positive and statistically significant coefficient of Recreation, Culture & Religion and negative and statistically significant of Social Protection becomes statistically insignificant after bias correction.

(iii) Robustness Check: Difference GMM Estimates

The analysis is re-estimated using a difference GMM estimator following Arellano and Bond (1991) as a robustness check for the baseline FE and LSDVC results. This approach accounts for potential endogeneity which arises because of inclusion of lagged dependent variables in a dynamic panel setting. It is applied on the full sample and is used to analyse whether the evidence of persistence in expenditure shares remains consistent under an alternative estimation strategy.

Table 7 reports difference GMM results within development expenditure categories across time and districts. The GMM results do not indicate strong evidence of persistence across development expenditure sectors as coefficients of many of the lagged dependent variables are statistically insignificant while LSDVC estimates (see table 5) show persistence in several sectors. This suggests that such persistence is not robust across estimation methods. Overall, the findings indicate that the evidence of relative budget rigidity within development expenditure sectors is sensitive to the choice of estimator.

Table 8 reports difference GMM results within current expenditure categories across time and districts. The findings show selective evidence of persistence across sectors. Economic Affairs and Recreation, Culture and Religion are positive and statistically significant which indicates persistence in these categories. However, most of the other sectors have insignificant coefficients of lagged dependent variables which suggests that persistence is not widespread. Conversely, the LSDVC estimates suggests persistence in comparatively more categories. The robustness check indicates that evidence of persistence is not consistently observed across estimation methods.

V. Limitations of the Study

This study is subject to some limitations. Firstly, the short time dimension of the panel (T=5) limits the ability to capture long-run budget rigidity and might affect the stability of dynamic estimates. Secondly, the results are sensitive to the choice of estimation method which is evident from the differences in results reported by FE, LSDVC, and GMM estimation methods. This suggests that expenditure rigidity is not uniformly robust across different estimation approaches. Thirdly, the findings of difference GMM estimator, used as a robustness check, might be subject to potential biases arising from small sample and instrument proliferation. Lastly, the study may not fully capture the underlying heterogeneity across regions as the study is based on aggregate district level data.

TABLE 7

Difference GMM Results within Actual Development Expenditure (2020-2024)

VARIABLES	(1) GPS (D)-GMM	(2) DAS (D) – GMM	(3) POSA (D) – GMM	(4) EA (D) – GMM	(5) EP (D) - GMM
L. GPS (D)	-0.637				
	(0.817)				
L. DAS (D)		0.00099			
		-0.00754			
L. POSA (D)			0.425		
			(0.867)		
L. EA (D)				0.172	
				(0.771)	
L. EP (D)					0.156
					(0.148)
Controls	YES	YES	YES	YES	YES
AR(2) p-value	0.45	0.266	0.359	0.027	0.393
Hansen p-value	0.635	1	0.59	0.187	0.163
Observations	60	60	60	60	60
No of Districts	20	20	20	20	20
VARIABLES	(6) HCA (D) – GMM	(7) H (D) – GMM	(8) RCR (D) – GMM	(9) EAS (D) – GMM	(10) SP (D) - GMM
L. HCA (D)	0.00267				
	(0.670)				
L. H (D)		-0.156			
		(0.637)			
L. RCR (D)			-0.279		
			(0.191)		
L. EAS (D)				-18.68**	
				(6.842)	
L. SP (D)					1.295***
					(0.430)
Controls	YES	YES	YES	YES	YES
AR(2) p-value	0.246	0.732	0.059	0.814	0.271
Hansen p-value	0.342	0.692	0.097	0.563	0.036
Observations	60	60	60	60	60
No of Districts	20	20	20	20	20

Source: Authors' estimation.

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

TABLE 8

Difference GMM Results within Actual Current Expenditure (2020-2024)

VARIABLES	(1) GPS (C)-GMM	(2) DAS (C) – GMM	(3) POSA (C) – GMM	(4) EA (C) – GMM	(5) EP (C) - GMM
L. GPS (C)	3.979				
	(3.608)				
L. DAS (C)		-0.202*			
		(0.101)			
L. POSA (C)			0.55		
			(1.400)		
L. EA (C)				7.273***	
				(2.545)	
L. EP (C)					-0.563***
					(0.142)
Controls	YES	YES	YES	YES	YES
AR(2) p-value	0.212	0.356	0.645	0.079	0.196
Hansen p-value	0.183	0.34	0.667	0.963	0.329
Observations	60	60	60	60	60
No of Districts	20	20	20	20	20
VARIABLES	(6) HCA (C) – GMM	(7) H (C) – GMM	(8) RCR (C) – GMM	(9) EAS (C) – GMM	(10) SP (C) - GMM
L. HCA (C)	-0.544				
	(0.412)				
L. H (C)		0.707			
		(1.293)			
L. RCR (C)			0.515*		
			(0.295)		
L. EAS (C)				17.49	
				(10.990)	
L. SP (C)					-0.167
					(0.195)
Controls	YES	YES	YES	YES	YES
AR(2) p-value	0.942	0.045	0.653	0.274	0.104
Hansen p-value	0.29	0.14	0.134	0.084	0.188
Observations	60	60	60	60	60
No of Districts	20	20	20	20	20

Source: Authors' estimation.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

VI. Conclusion

The study examines allocation pattern of actual expenditures by the district governments and the corresponding persistence which captures relative budget rigidity over time, giving special attention towards balance between development and current expenditures and persistence of allocation of sectoral shares within expenditures. For the analysis of fiscal prioritisation and budget rigidity, the study utilises actual expenditure data pertaining to 20 districts of Pakistan for the time period of 2020-2024 provided by the Financial Accounting and Budgeting System (FABS). Fiscal prioritisation is examined with the help of descriptive analysis, while budget rigidity is analysed by first applying a fixed effects panel regression model as the baseline specification then the LSDVC (AH) estimator as the main approach and difference GMM (AB) used for robustness check.

The study examines how the district budgets varies over time across both development and current spending and whether shares of major sectors remain persistent or adjust across districts. The study also groups districts into three tiers to account for differences across districts. Provincial capitals and Islamabad form the first tier while the remaining districts are divided into two groups based on population size. This allows for a comparison of fiscal priorities and budget rigidity across different types of districts.

The findings suggests that fiscal behaviour at the district level in Pakistan is characterised by limited shifts in spending priorities with current expenditure accounting for a significant share of the district budgets. The analysis also reveals relative budget rigidity among share of certain major sectors within development and current spending although this rigidity is not uniform across districts and tiers.

Based on the LSDVC estimates, the empirical results suggests the presence of relative budget rigidity across expenditure categories, although it is not widespread. In case of development expenditure across all districts, General Public Services, Public Order and Safety Affairs, Economic Affairs, Recreation, Culture and Religion, and Social Protection exhibit persistence in expenditure allocation, reflecting relative budget rigidity. In contrast, Education Affairs and Services exhibits relatively greater flexibility in allocation. The pattern changes when districts are examined across tiers. In case of tier 1, only Education Affairs and Services and Social Protection exhibit persistence and relative rigidity in expenditure adjustment. For tier 2, General Public Services, Public Order and Safety Affairs, Housing and Community Amenities, and Recreation, Culture and Religion exhibit persistence and relative rigidity in expenditure adjustment while Education Affairs and Services exhibit greater flexibility in allocation. In case of tier 3, only Social Protection indicate persistence and relative rigidity in expenditure adjustment.

Within current expenditure across all districts, Public Order and Safety Affairs, Recreation, Culture and Religion, Education Affairs and Services, and Social Pro-

tection exhibit persistence in expenditure allocation, reflecting relative budget rigidity while General Public Services and Housing and Community Amenities show greater flexibility in allocation. The pattern of spending varies when districts are examined across tiers. For tier 1, Public Order and Safety Affairs demonstrates persistence in expenditure allocation which reflects relative budget rigidity. In case of tier 2, persistence is evident in sectors such as Public Order and Safety Affairs, Environment Protection, Health, and Education Affairs & Services. Conversely, General Public Service and Housing and Community Amenities exhibit allocative flexibility. For tier 3, evidence of persistence is observed in General Public Service and Public Order and Safety Affairs. Overall, the findings suggest that relative budget rigidity is limited to certain sectors with fiscal adjustments remaining uneven and some sectors showing greater flexibility than others. The study contributes to understanding of expenditure allocation and persistence at district level within the subnational fiscal framework of Pakistan.

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Appendix

TABLE A-1

Regression Results within Actual Development Expenditure for Tier 1 (2020-2024)

VARIABLES	(1) GPS (D)-FE	(1) GPS (D) - LSDVC	(2) DAS (D) - FE	(2) DAS (D) - LSDVC	(3) POSA (D) - FE	(3) POSA (D) – LSDVC	(4) EA (D) - FE	(4) EA (D) - LSDVC	(5) EP (D) - FE	(5) EP (D) - LSDVC
L. GPS (D)	0.313	0.472								
	(0.300)	(0.306)								
L. DAS (D)			0.0094	40.35***						
			(0.0261)	(4.49E-05)						
L. POSA (D)					0.264	0.289				
					(0.269)	(0.412)				
L. EA (D)							-0.523**	-0.0897		
							(0.162)	(0.378)		
L. EP (D)									-0.332	-0.322
									(0.459)	(0.371)
Controls	YES		YES		YES		YES		YES	
Constant	16.6		0.179***		1.127***		46.25**		3.096**	
	(13.750)		(0.013)		(0.179)		(11.700)		(0.832)	
Obs.	20	20	20	20	20	20	20	20	20	20
R-squared	0.304	-	0.735	-	0.439	-	0.506	-	0.451	-
No of Districts	5	5	5	5	5	5	5	5	5	5
VARIABLES	(6) HCA (D) - FE	(6) HCA (D) - LSDVC	(7) H (D) - FE	(7) H (D) - LSDVC	(8) RCR (D) - FE	(8) RCR (D) - LSDVC	(9) EAS (D) - FE	(9) EAS (D) - LSDVC	(10) SP (D) - FE	(10) SP (D) - LSDVC
L. HCA (D)	-0.117	0.0761								
	(0.0644)	(0.309)								
L. H (D)			0.129	0.429						
			(0.368)	(0.328)						
L. RCR (D)					-0.167***	0.386				
					(0.0309)	(0.397)				
L. EAS (D)							0.780**	1.172***		
							(0.278)	(0.235)		
L. SP (D)									0.663***	0.965***
									(0.120)	(0.290)
Controls	YES		YES		YES		YES		YES	
Constant	13.44*		11.27***		2.306		3.024		-0.793	
	(5.182)		(1.053)		(2.457)		(1.489)		(6.982)	
Obs.	20	20	20	20	20	20	20	20	20	20
R-squared	0.373	-	0.545	-	0.138	-	0.669	-	0.660	-
No of Districts	5	5	5	5	5	5	5	5	5	5

Source: Authors' estimation.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE A-2

Regression Results within Actual Development Expenditure for Tier 2 (2020-2024)

VARIABLES	(1) GPS (D)-FE	(1) GPS (D) - LSDVC	(2) DAS (D) - FE	(2) DAS (D) - LSDVC	(3) POSA (D) - FE	(3) POSA (D) – LSDVC	(4) EA (D) - FE	(4) EA (D) - LSDVC	(5) EP (D) - FE	(5) EP (D) - LSDVC
L. GPS (D)	0.361	0.582***								
	(0.197)	(0.211)								
L. DAS (D)			0	0						
			(0)	(0)						
L. POSA (D)					-0.332**	3.631***				
					(0.116)	(0.067)				
L. EA (D)							0.17	0.21		
							(0.160)	(0.257)		
L. EP (D)									-0.369***	0.133
									(0.0214)	(0.279)
Controls	YES		YES	YES	YES		YES		YES	
Constant	15.27*		0	0	0.0761		-6.235		0.47	
	(7.764)		(0)	(0)	(0.0604)		(23.060)		(0.403)	
Obs.	36	36	36	36	36	36	36	36	36	36
R-squared	0.553	-	-	-	0.216	-	0.624	-	0.197	-
No of Districts	9	9	9	9	9	9	9	9	9	9
VARIABLES	(6) HCA (D) - FE	(6) HCA (D) - LSDVC	(7) H (D) - FE	(7) H (D) - LSDVC	(8) RCR (D) - FE	(8) RCR (D) - LSDVC	(9) EAS (D) - FE	(9) EAS (D) - LSDVC	(10) SP (D) - FE	(10) SP (D) - LSDVC
L. HCA (D)	0.0698	0.524**								
	(0.240)	(0.258)								
L. H (D)			-0.339***	-0.0988						
			(0.0671)	(0.269)						
L. RCR (D)					0.589***	2.736***				
					(0.0328)	(0.102)				
L. EAS (D)							-0.657	-0.653***		
							(0.487)	(0.222)		
L. SP (D)									0.0927	0.0927
									(0.175)	(0.279)
Controls	YES		YES		YES		YES		YES	
Constant	3.734		8.242*		0.0435		73.52**		0.0841	
	(4.892)		(4.066)		(0.0377)		(30.130)		(0.050)	
Obs.	36	36	36	36	36	36	36	36	36	36
R-squared	0.292	-	0.177	-	0.495	-	0.591	-	0.07	-
No of Districts	9	9	9	9	9	9	9	9	9	9

Source: Authors' estimation.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE A-3

Regression Results within Actual Development Expenditure for Tier 3 (2020-2024)

VARIABLES	(1) GPS (D)-FE	(1) GPS (D) - LSDVC	(2) DAS (D) - FE	(2) DAS (D) - LSDVC	(3) POSA (D) - FE	(3) POSA (D) – LSDVC	(4) EA (D) - FE	(4) EA (D) - LSDVC	(5) EP (D) - FE	(5) EP (D) - LSDVC
L. GPS (D)	-0.244*	-0.086								
	(0.108)	(0.189)								
L. DAS (D)			0	0						
			(0)	(0)						
L. POSA (D)					-0.218**	-0.055				
					(0.0837)	(0.338)				
L. EA (D)							0.0466	0.0853		
							(0.293)	(0.351)		
L. EP (D)									-0.149***	0.317
									(0.0304)	(0.326)
Controls	YES		YES	YES	YES		YES		YES	
Constant	32.98***		0	0	2.543***		2.228		6.876*	
	(3.943)		(0)	(0)	(0.366)		(13.950)		(3.217)	
Obs.	24	24	24	24	24	24	24	24	24	24
R-squared	0.618	-	-	-	0.391	-	0.300	-	0.229	-
No of Districts	6	6	6	6	6	6	6	6	6	6
VARIABLES	(6) HCA (D) - FE	(6) HCA (D) - LSDVC	(7) H (D) - FE	(7) H (D) - LSDVC	(8) RCR (D) - FE	(8) RCR (D) - LSDVC	(9) EAS (D) - FE	(9) EAS (D) - LSDVC	(10) SP (D) - FE	(10) SP (D) - LSDVC
L. HCA (D)	0.00325	0.0299								
	(0.102)	(0.280)								
L. H (D)			-0.032	0.0596						
			(0.157)	(0.176)						
L. RCR (D)					-0.122	0.133				
					(0.273)	(0.336)				
L. EAS (D)							0.122	0.336		
							(0.134)	(0.295)		
L. SP (D)									0.720*	0.863**
									(0.337)	(0.396)
Controls	YES		YES		YES		YES		YES	
Constant	16.25**		2.735		2.002**		4.777**		9.229	
	(5.374)		(1.933)		(0.748)		(1.512)		(13.430)	
Obs.	24	24	24	24	24	24	24	24	24	24
R-squared	0.366	-	0.470	-	0.563	-	0.385	-	0.650	-
No of Districts	6	6	6	6	6	6	6	6	6	6

Source: Authors' estimation.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE A-4

Regression Results within Actual Current Expenditure for Tier 1 (2020-2024)

VARIABLES	(1) GPS (D)-FE	(1) GPS (D) - LSDVC	(2) DAS (D) - FE	(2) DAS (D) - LSDVC	(3) POSA (D) - FE	(3) POSA (D) – LSDVC	(4) EA (D) - FE	(4) EA (D) - LSDVC	(5) EP (D) - FE	(5) EP (D) - LSDVC
L. GPS (D)	-0.119	-0.119								
	(0.864)	(0.395)								
L. DAS (D)			-0.0886	0.751						
			(0.0538)	(4.924)						
L. POSA (D)					0.240**	0.753***				
					(0.0863)	(0.284)				
L. EA (D)							0.516	0.529		
							(0.850)	(0.387)		
L. EP (D)									-0.0462	479.7***
									(0.569)	(1.32E-08)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	55.82		0.00391		6.877**		1.733		0.0489	-
	(38.180)		(0.0131)		(1.603)		(15.270)		(0.0397)	
Obs.	20	20	20	20	20	20	20	20	20	20
R-squared	0.148	-	0.223	-	0.649	-	0.206	-	0.282	-
No of Districts	5	5	5	5	5	5	5	5	5	5
VARIABLES	(6) HCA (D) - FE	(6) HCA (D) - LSDVC	(7) H (D) - FE	(7) H (D) - LSDVC	(8) RCR (D) - FE	(8) RCR (D) - LSDVC	(9) EAS (D) - FE	(9) EAS (D) - LSDVC	(10) SP (D) - FE	(10) SP (D) - LSDVC
L. HCA (D)	-0.359*	-0.322								
	(0.134)	(0.356)								
L. H (D)			-0.072	-0.0644						
			(0.220)	(0.352)						
L. RCR (D)					0.0518	0.155				
					(0.194)	(0.421)				
L. EAS (D)							-0.228	-0.22		
							(0.252)	(0.353)		
L. SP (D)									0.161**	0.364
									(0.0401)	(0.350)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	3.972**	-	14.83**	-	0.801*	-	13.54**	-	2.592	-
	(0.896)		(4.667)		(0.374)		(4.484)		(1.666)	
Obs.	20	20	20	20	20	20	20	20	20	20
R-squared	0.4	-	0.22	-	0.318	-	0.272	-	0.253	-
No of Districts	5	5	5	5	5	5	5	5	5	5

Source: Authors' estimation.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE A-5

Regression Results within Actual Current Expenditure for Tier 2 (2020-2024)

VARIABLES	(1) GPS (D)-FE	(1) GPS (D) - LSDVC	(2) DAS (D) - FE	(2) DAS (D) - LSDVC	(3) POSA (D) - FE	(3) POSA (D) – LSDVC	(4) EA (D) - FE	(4) EA (D) - LSDVC	(5) EP (D) - FE	(5) EP (D) - LSDVC
L. GPS (D)	-2.106	-2.105***								
	(2.297)	(0.0836)								
L. DAS (D)			-0.367***	1,954***						
			(0.0204)	(0)						
L. POSA (D)					0.417	0.541*				
					(0.364)	(0.280)				
L. EA (D)							-0.395	0.0455		
							(0.281)	(0.255)		
L. EP (D)									-0.135	2.109***
									(0.465)	(0.241)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	61.09	-	0.00444***	-	-2.916	-	3.56	-	0.0152	-
	(57.310)		(0.000174)		(5.009)		(4.320)		(0.0152)	
Obs.	36	36	36	36	36	36	36	36	36	36
R-squared	0.565	-	0.437	-	0.897	-	0.449	-	0.38	-
No of Districts	9	9	9	9	9	9	9	9	9	9
VARIABLES	(6) HCA (D) - FE	(6) HCA (D) - LSDVC	(7) H (D) - FE	(7) H (D) - LSDVC	(8) RCR (D) - FE	(8) RCR (D) - LSDVC	(9) EAS (D) - FE	(9) EAS (D) - LSDVC	(10) SP (D) - FE	(10) SP (D) - LSDVC
L. HCA (D)	-0.558**	-0.531**								
	(0.201)	(0.240)								
L. H (D)			0.642**	0.974***						
			(0.212)	(0.247)						
L. RCR (D)					-0.0750***	-0.0712				
					(0.0215)	(0.282)				
L. EAS (D)							4.644	4.645***		
							(2.678)	(0.0205)		
L. SP (D)									-0.0325	-0.00392
									(0.214)	(0.267)
Controls	YES	YES	YES	YES	YES		YES	YES	YES	YES
Constant	1.013	-	9.515**	-	0.0875	-	-107.9	-	-0.214	-
	(0.783)		(3.509)		(0.0913)		(98.610)		(0.516)	
Obs.	36	36	36	36	36	36	36	36	36	36
R-squared	0.523	-	0.687	-	0.267	-	0.733	-	0.737	-
No of Districts	9	9	9	9	9	9	9	9	9	9

Source: Authors' estimation.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE A-6

Regression Results within Actual Current Expenditure for Tier 3 (2020-2024)

VARIABLES	(1) GPS (D)-FE	(1) GPS (D) - LSDVC	(2) DAS (D) - FE	(2) DAS (D) - LSDVC	(3) POSA (D) - FE	(3) POSA (D) – LSDVC	(4) EA (D) - FE	(4) EA (D) - LSDVC	(5) EP (D) - FE	(5) EP (D) - LSDVC
L. GPS (D)	0.357	0.747**								
	(0.187)	(0.291)								
L. DAS (D)			-0.184*	3,406***						
			(0.0746)	(0)						
L. POSA (D)					0.978**	1.198***				
					(0.293)	(0.271)				
L. EA (D)							-0.492	0.0311		
							(0.290)	(0.321)		
L. EP (D)									-0.0894	78.35***
									(0.276)	(4.49E-06)
Controls	YES		YES		YES		YES		YES	
Constant	10.39		0.0168**		-0.0591		14.37***		0.0982**	
	(5.350)		(0.00439)		(4.139)		(0.773)		(0.0248)	
Obs.	24	24	24	24	24	24	24	24	24	24
R-squared	0.707	-	0.367	-	0.569	-	0.532	-	0.27	-
No of Districts	6	6	6	6	6	6	6	6	6	6
VARIABLES	(6) HCA (D) - FE	(6) HCA (D) - LSDVC	(7) H (D) - FE	(7) H (D) - LSDVC	(8) RCR (D) - FE	(8) RCR (D) - LSDVC	(9) EAS (D) - FE	(9) EAS (D) - LSDVC	(10) SP (D) - FE	(10) SP (D) - LSDVC
L. HCA (D)	0.105	0.444								
	(0.217)	(0.544)								
L. H (D)			0.0594	0.243						
			(0.274)	(0.259)						
L. RCR (D)					0.394**	0.843				
					(0.128)	(1.629)				
L. EAS (D)							-0.379	-0.378		
							(0.474)	(0.344)		
L. SP (D)									-0.445**	-0.0265
									(0.165)	(0.389)
Controls	YES		YES		YES		YES		YES	
Constant	1.803**		17.01***		0.810***		45.10**		0.936**	
	(0.457)		(4.102)		(0.113)		(16.130)		(0.298)	
Obs.	24	24	24	24	24	24	24	24	24	24
R-squared	0.414	-	0.658	-	0.879	-	0.433	-	0.303	-
No of Districts	6	6	6	6	6	6	6	6	6	6

Source: Authors' estimation.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1