

Institutional Decentralization, Fiscal Decentralization, and Sales Tax on Services Collection: Evidence from Khyber Pakhtunkhwa, Pakistan

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Article

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Posted Date: September 28th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10804416/v1>

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Additional Declarations: No competing interests reported.

**Institutional Decentralization, Fiscal Decentralization, and Sales Tax on Services Collection:
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Abstract: This study examines the short- and long-term relationships among DKPRA, FDkp, and STS collection in the Khyber Pakhtunkhwa Province of Pakistan. Using annual time-series data from fiscal years 2000-01 to 2024-25, the ARDL baseline estimation indicates a significant positive long-term relationship between STS collection and DKPRA and a significant negative long-term relationship between STS collection and FDkp. The FMOLS estimation also confirmed the robustness of the findings of the ARDL bound test. The findings indicate that merely FDkp without a specialized and capable provincial tax-collecting institution may cause a decrease in STS collection in the long term.

Keywords: Sales Tax on Services, Institutional Decentralization, Fiscal Decentralization, Khyber Pakhtunkhwa Revenue Authority, Standard Theory of Federalism.

JEL Codes: H71; H77; D73

2. Introduction of Study

This study examines the relationship between institutional (DKPRA), fiscal decentralization (FDkp), and sales tax on services (STSkp) collection in the Khyber Pakhtunkhwa (KPK) province of Pakistan. Sales tax on services is a type of indirect tax that is levied and charged on the provision of services, except those specifically exempted in the first schedule of the Khyber Pakhtunkhwa Sales Tax on Services Act, 2022 (KPSTS Act, 2022). In this study, institutional decentralization refers to the establishment of KPRA in 2013, and fiscal decentralization refers to the fiscal autonomy of KPK province in light of the 18th Constitutional Amendment in Pakistan in 2010. Similarly, the STS collection discussed in this paper refers specifically to the STS collection in the KPK province, denoted as STSkp. When Pakistan came into existence in 1947, the sales tax (services and goods) was governed under the Indian Act of 1935, in accordance with section 8 of the Indian Independence Act of 1947.

As per section 100 (3) read with serial number 48 of the Seventh Schedule of the provincial legislative list, sales tax on goods and advertising (services) was the mandate of provincial governments. However, the Sales Tax Act of 1948 was passed by the Constituent Assembly of Pakistan on 1st April 1948, by which the mandate of levy and collection of sales tax on goods (GST) was shifted from the provincial governments to the federation while retaining the mandate of STS with the provincial governments.

However, due to a lack of a proper collection mechanism, the provincial governments failed to collect STS at the provincial level. In FY 2000, during the regime of former President Pervez Musharraf, Pakistan initiated the levy and collection of STS. Thus, the governors of all four provinces of Pakistan passed sales tax ordinances in their respective provinces. Through these ordinances, which were effective from 1st July 2001¹ the FBR was empowered to start levying and collecting STS on behalf of the provincial governments (Ara & Sabir, 2010; www.srb.gos.pk).

¹ https://www.srb.gos.pk/srb/history-of-sales-tax-on-services/?utm_source.

Later, through the Eighteenth Amendment to the Constitution of Pakistan, effective from 20 April 2010, and the 7th NFC (National Finance Commission) Award, which was effective from 1st July 2010, the responsibility of levying and collecting sales tax on services was shifted back from the federation to the provincial governments (Ara & Sabir, 2010). Thus, the transfer of responsibilities for levy and collection of sales tax from the federation to the province is called Sales Tax on Services Decentralization (STSD). In FY 2013, the KPRA was established under the Khyber Pakhtunkhwa (KPK) Finance Act, 2013. The Act became effective on July 1, 2013, in the KPK province. The primary responsibility of the KPRA is to manage and collect STS and infrastructure development Cess within the Khyber Pakhtunkhwa province of Pakistan.

Pakistan is facing serious economic challenges, including deteriorating economic growth, persistent decline in foreign reserves, rising debt burdens, overdependence on external finance, and an increase in the fiscal deficit to an alarming level. According to the fiscal consolidated report of the Finance Division for FY 2024-25², the total expenditure of Pakistan reached Rs. 24.494 trillion against the total revenue of Rs. 17.997 trillion, leading to an alarmingly high fiscal deficit of Rs. 6.497 trillion. Taxes constitute a major portion of revenue, with a total annual tax collection of Rs. 10.085 trillion by the end of FY 2023-24, which constitutes 70.69% of Pakistan's total revenue. Furthermore, the analysis of the overall structure of taxes at the country level confirmed that total STS collection constitutes 47.37% of provincial own-source revenue and 62.56% of overall provincial tax collection, which further motivated me to focus on STS collection for my current research study (the fiscal consolidated report of the Finance Division for the FY 2024-25). Sales tax on services collection of the Khyber Pakhtunkhwa Province (STSkp), which is administered by KPRA, constitutes 67.89% of KPK provincial tax collection and 54.5% of the own-source revenue of the KP Province (<https://finance.gkp.pk/article/white-paper-2024->

² https://finance.gov.pk/fiscal/july_june_2024_25.pdf

25). Thus, STSkp constitutes a major portion of the provincial revenue of KPK Province, which motivates me to limit my focus to STSkp for my current research study.

The literature demonstrates that different empirical studies have examined the relationship between institutional decentralization (DKPRA), fiscal decentralization (FDkp), and different aspects of taxes at both national and international levels; however, to the authors' knowledge, not a single research study has explored the relationship between DKPRA, FDkp, and STS collection in the KP Province of Pakistan. The purpose of incorporating both variables in the same empirical model is to assess their individual relationship with STS collection. The standard theory of federalism and institutional theory provide a theoretical foundation for explaining the relationship between decentralization (institutional and fiscal decentralization) and STS collection. The basic aim of this research study is to explore the relationship between DKPRA, FDkp, and STS collection in the KP Province. In light of the standard theory of federalism and institutional theory, it is expected that there is an association between DKPRA, FDkp, and STS collection in the KP Province

The present study has four main contributions to the existing literature on fiscal decentralization and tax administration. First, to the best of the author's knowledge, this study provides the first empirical evidence from Pakistan on the joint role of fiscal autonomy (FDkp), representing the fiscal dimension of STS devolution, and institutional decentralization through the establishment of KPRA (DKPRA) in STS collection. Using the annual data about the pre- and post-KPRA period, the study investigated how these two dimensions of decentralization are associated with STS performance in KP province. The previous studies either covered periods before the STS devolution period or used other proxies that may lead to discrepancies and an incomplete picture. Atif & Nazir (2023) explored the influence of STS devolution on the tax buoyancy of the KP province by using the total output of the service sector as a proxy for the tax base, but they overlooked that from FY 2013 to 2024, only those services listed in the second schedule of the KP Finance Act 2013 and the KP STS Act 2022 were taxable, while the services that were not included there were exempt from STS. Furthermore, at the time of the establishment of

KPRA in July 2013, only 11 sectors were included in Schedule II (working tariff) of the KP Finance Act 2013. The tax base was broadened, and the number of taxable sectors reached 91 in Schedule II of the KP Finance Act 2013 during the fiscal year 2017-18³. Consequently, the results of this study, which are derived from a correct proxy, will certainly highlight the actual influence of institutional and fiscal decentralization on STS collection in the KP province and will bring an extension to the current literature on both topics.

Second, this study specifically examined the independent relationship between institutional decentralization, indicated by the establishment of KPRA, and fiscal decentralization, measured by the level of provincial fiscal autonomy, in relation to STS collection in the KPK Province. The existing literature lacks such a distinction between the relationship of tax administration and broader fiscal autonomy with STS collection in KPK Province, and this study certainly aims to fill this gap, which will extend the literature on institutional decentralization, fiscal decentralization, and provincial revenue mobilization.

Third, this study also has a public policy contribution demonstrating that merely STS devolution without a specialized and capable provincial tax-collecting institution is insufficient for enhancing provincial tax collection. Therefore, in addition to STS decentralization, the government of KP should emphasize strengthening, innovating, and modernizing the operational capacity of the provincial tax-collecting authority through investment in capacity building of collectorate staff, adopting a modern risk-based audit and enforcement system, a data-driven taxpayer information system, enhancing taxpayers' facilitation services, and establishing tax policies according to the fiscal capacity and economic conditions of taxpayers. These results are in line with the IMF's recommendations (IMF, 2019) and the World Bank (2019) studies for Pakistan and other countries with decentralized fiscal systems.

³ <https://kpra.gov.pk/performance-overview/>.

The rest of the paper is organized as follows. Section 2 reviews the relevant literature, Section 3 indicates the methodology of the study, Section 4 is concerned with the interpretation of the findings of this study, and Section 5 concludes the paper by presenting policy recommendations and outlining the study's limitations.

2. Overview of the Literature

2.1 Theoretical Foundation

The standard theory of federalism and institutional theory provide a theoretical foundation for explaining the nature of the association between decentralization (institutional and fiscal devolution) and STS collection. The standard theory of federalism explains how fiscal devolution leads to an increase in provincial revenue, while the institutional theory argues that the effectiveness of fiscal devolution relies on the capacity and strength of newly established tax-collecting institutions such as the Khyber Pakhtunkhwa Revenue Authority, which is responsible for the implementation of STS reform (Meyer & Rowan, 1977).

2.1.1 Fiscal Federalism Theory

Richard Musgrave developed the standard theory of federalism in 1959, and Oates further advanced it in 1999 and 2005. This theory suggests that the devolution of STS from the federation to the provinces improves governance, transparency, and accountability of provincial governments to their constituents. The proponents of fiscal decentralization suggest that the provincial governments are in a position to establish tax policies that are aligned with the income levels of their residents. Charging tax rates according to the income level of their locality boosts the confidence and trust of residents in government, which leads to an increase in tax compliance, and thus STS collection at the provincial level increases (Oates, 1999; 2005).

2.1.2 The institutional theory

Meyer and Rowan (1977) first introduced institutional theory, and Douglass C. North further extended it in 1990. According to this theory, the success of fiscal devolution depends on the capacity and strength

of newly established tax-collecting institutions, which are responsible for implementing fiscal reform (Meyer and Rowan 1977). This theory suggests that decentralizing tax-collecting responsibility to sub-national governments without strengthening the institutional capacity of tax-collecting agencies will not be effective in achieving the desired long-term revenue target.

2.1.3 Synthesis of the Theoretical Framework

Although the standard theory of federalism and institutional theory measure different aspects of decentralization, both of these theories are complementary, reinforcing each other. The standard theory of federalism explains how devolution of fiscal responsibility leads to an increase in fiscal autonomy and provincial STS collection, while the institutional theory explains that fiscal devolution alone is not sufficient to increase provincial revenue collection; rather, the success of STS devolution depends on the capacity and strength of newly established tax-collecting institutions such as the Khyber Pakhtunkhwa Revenue Authority, which is responsible for the implementation of STS reform (Meyer & Rowan, 1977; Pisauro, 2001).

Thus, in light of the assumptions of these theories, this study incorporates both fiscal decentralization, reflected by fiscal autonomy, and institutional decentralization, reflected by the establishment of KPRA in KP province.

2.2 Fiscal Decentralization and Sales Tax on Services Collection

The literature review demonstrates that some studies reported a positive effect of fiscal decentralization on tax and associated variables, while others report negative or mixed results. The proponents suggest that STS decentralization will enable the provincial government of KP to formulate its own effective tax policies in light of the financial positions of its residents. Similarly, this reform will empower the provincial government to develop better strategies for the enforcement and collection of STS to increase its own-source revenue for meeting its provincial financial needs.

Martínez et al. (2022) and Zheng (2017) confirmed the positive influence of fiscal devolution on the operational efficiency of tax collection and the overall tax collection of 28 OECD countries and China. Dziobek et al. (2011) and S. Yang (2019) observed that developed countries are more fiscally decentralized as compared to developing ones, and also the impact of FD is more prominent in advanced economies as compared to emerging economies. Studies at the national and provincial levels of Pakistan also indicate a positive influence of STS decentralization reform on tax collection. Atif & Nazir (2023) observed a positive impact of STS decentralization on STS buoyancy, over the short and long term, in the KP Province. Binte Shahab (2018) observed a favorable influence of fiscal devolution on the tax-to-GDP ratio of Pakistan. Hussain et al. (2021) and Ara & Sabir (2010) suggest that the government should promote fiscal decentralization, which will broaden the tax base, and thus STS collection will increase. The opponents are of the view that STS decentralization would have no fruitful results due to a weak financial position, a poor institutional framework, conflicts of interest and disputes between KPRA and FBR on the mandate of certain sectors, and a lack of specialized human resources and modern technology for the collection and enforcement of taxes, etc. Some studies highlight the extent of fiscal devolution and challenges in the successful implementation of STS reform. Tunio & Nabi (2021) analyzed the level of fiscal decentralization of Pakistan spanning from 1979 to 2019 and observed that about 9.1% of revenue is collected through provinces, while 90.9% is collected through the federal government. Bah et al. (2011) and Nabi and Shaikh (2010) highlighted the challenges in the implementation of STS reform and the outcomes of the Eighteenth Amendment and the 7th NFC Award.

2.3 Institutional Decentralization and Sales Tax on Services Collection

This theory suggests that decentralization of tax collection responsibility without strengthening the institutional capacity of tax-collecting agencies will not be sufficient to achieve the desired long-run revenue target. In the case of STS administration, the establishment of KPRA represents institutional reform. The proponents suggest that fiscal devolution will lead to the establishment of provincial tax-collecting authorities, which will broaden the tax base through local administration recruited by the

provincial tax authorities, set tax rates according to the financial position of their local citizens, and develop effective monitoring and enforcement strategies in light of the ground realities of different territorial jurisdictions, which play a pivotal role in long-term sustainable revenue growth (Ara & Sabir, 2010; Hussain et al., 2021). Gambaro et al. (2007) observed a positive influence of institutional structure on tax collection in 65 countries. Cevik et al. (2016) suggest that the tax-to-GDP ratio of Pakistan can be increased by promoting and strengthening tax administration and ensuring tax compliance. Alam et al. (2024) observed that digitalization and facilitation services by the provincial tax authority have a positive influence on STS collection in KP province.

Akol et al. (2025) observed a positive influence of strengthening the administrative capacity of the tax department on revenue collection in 121 countries. Devas et al. (2001) and Kidd and Crandall (2006) revealed that the establishment of RAs strengthens administrative capacity but lacks any solid evidence of independent positive influence on revenue performance. Baer et al. (2025) analyzed panel data for 111 countries and reported a significant positive effect of tax administration effectiveness on tax revenue. Arif et al. (2017) observed an insignificant positive influence of semi-autonomous revenue authorities (SARAs) on tax revenue in Pakistan. Bah et al. (2011) highlighted the challenges in the implementation of STS reform and the outcomes of the 18th amendment due to provincial tax administration weaknesses. Atif & Nazir (2023) suggest that weaknesses in the provincial tax-collecting agency constrained STS collection in KP Province.

2.4 Other Determinants of Sales Tax on Services Collection.

Although institutional and fiscal devolution are the main explanatory variables examined in this study, the collection of sales tax on services is also associated with broader economic and institutional conditions. The empirical literature demonstrates that quality of governance, service sector growth, and macroeconomic stability are associated with the tax base, compliance level of taxpayers, and provincial revenue collection efficiency (IMF, 2025; Bird, 2011). To examine the independent relationship of fiscal (FDkp) and institutional decentralization (DKPRA) with sales tax on services collection, this study

employs gross value added in the services sector (GVASG), control of corruption in Pakistan (CC), and inflation (INF) as control variables.

The empirical studies revealed positive, negative, and mixed results regarding the relationships of these control variables with tax collection. Patoli et al. (2012) and Süssmuth (2013) reported a positive relationship between inflation and tax collection in Pakistan and the USA. Heer and Süssmuth (2013) also observed a positive association of inflation with tax collection in Pakistan and the USA. M. S. Hassan et al. (2021) observed an inverse relationship, while Arif & Rawat (2018) observed an insignificant positive relationship between inflation and tax collection in Pakistan.

Likewise, Oanh et al. (2024) study revealed a positive relationship between control of corruption and tax collection for 25 developed and 30 developing countries. Baum et al. (2017) reported no significant relationship between corruption and different categories of tax collection, analyzing a sample of 147 countries compiled by the IMF for the period from 1995 to 2014. Imam and Jacobs (2007), Ajaz and Ahmad (2010), Arif & Rawat (2018), and Abebe & Fikre (2020) identified an inverse association between control of corruption and tax collection in the Middle Eastern countries and the EGLE countries.

Furthermore, the empirical studies posit that expansion in the services sector and effective tax administration broaden the taxable base, causing a rise in indirect tax collection (Richard, Bird & Gendron, 2007; Consumption Tax Trends, 2020; Keen, 2013). Therefore, GVASG is employed as a control variable to capture the association with service sector growth and to isolate the individual relationships of fiscal (FDkp) and institutional (DKPRA) decentralization with provincial STS collection in the KPK province.

2.5 Research Gap

The existing literature indicates that numerous studies have examined the relationship between institutional decentralization and fiscal decentralization (FD) and different aspects of taxes at both national and international levels, including semi-autonomous revenue authorities, tax administrative

reforms, tax buoyancy, tax efficiency, the tax-to-GDP ratio, the degree of decentralization, and challenges to STS decentralization reform; nonetheless, based on the authors' knowledge, not a single research study has explored the relationship between institutional devolution (DKPRA), fiscal decentralization (FDkp), and STS collection in the KP Province of Pakistan. Thus, this unexplored area provides me with an opportunity to investigate the relationship between institutional devolution (DKPRA), fiscal devolution (FDkp), and STS collection in the KP Province. The purpose of incorporating both variables in the same empirical model is to assess their independent effect on STS collection.

2.6 Hypotheses Development

In light of the standard theory of federalism and institutional theory, this study posits that institutional and fiscal decentralization are associated with sales tax on services collection in the KP Province. Institutional decentralization reflects the establishment of KPRA (DKPRA), while fiscal decentralization measures the degree of provincial fiscal autonomy. Thus, the study formulates the following hypothesis.

Hypothesis 1: Institutional Decentralization and STS Collection

H0: Institutional decentralization (DKPRA) has no significant relationship with STS collection (STS_{kp}) in KP Province.

H1: Institutional decentralization (DKPRA) has a significant relationship with STS collection (STS_{kp}) in KP Province.

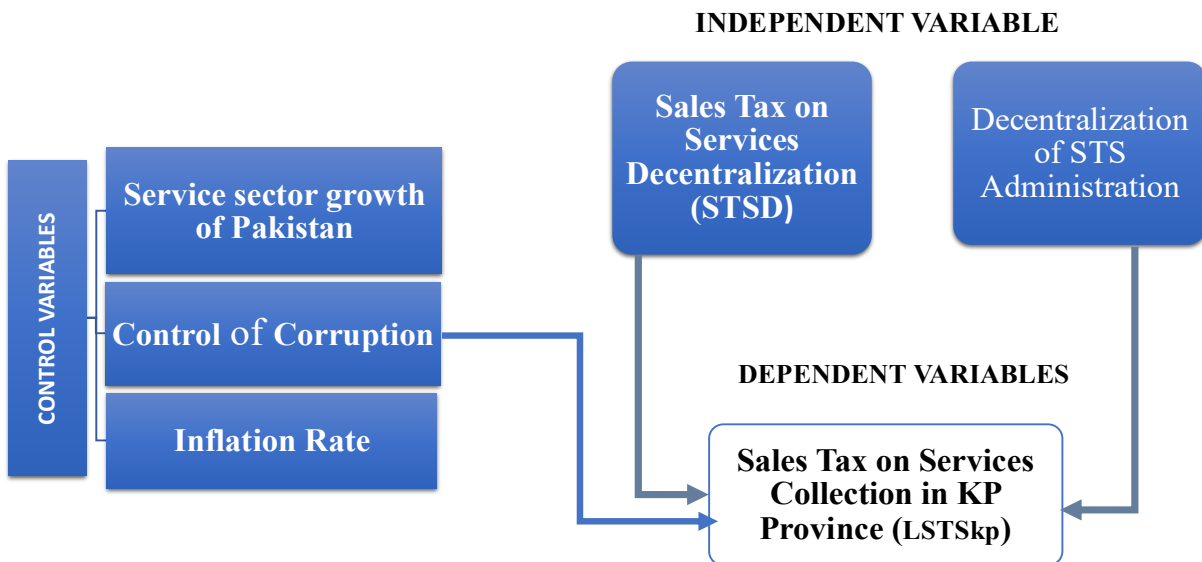
Hypothesis 2: Fiscal Decentralization and STS Collection

H0: Fiscal decentralization (FD_{kp}) has no significant relationship with STS collection (STS_{kp}) in KP Province.

H1: Fiscal decentralization (FD_{kpj}) has a significant relationship with STS collection (ST_{Skp}) in KP Province.

2.7 Conceptual Framework of Sales Tax on Services Collection of KP Province and Institutional and Fiscal Decentralization: The conceptual framework illustrating the relationship between decentralization (fiscal and institutional decentralization) and STS collection in KP Province is given in Figure 1.

Figure 1: Conceptual Framework of the Study



- **Dependent Variable:** STS collection in KP Province.
- **Explanatory Variable:** DKPRA and FD_{kp} in KP Province.
- **Control Variables:** GVASG, CC, and INF.

3 Research Design and Methodology

3.1 Research Design: This study employed a quantitative research approach with annual time series data spanning from FY 2000-01 to 2024-25. The ARDL (Auto-Regressive Distributed Lag) is employed for the determination of both short-term and long-term relationships between the dependent

and explanatory variables of the study. The FMOLS estimator is used for confirmation of robustness and consistency of the ARDL results, and the TY predictive causality approach is used, which provides complementary evidence on temporal predictive relationships between the main explanatory variables (DKPRA and FDkp) and STS collection.

3.2 Data Collection Sources: The data about the dependent variable, explanatory variable, and control variables have been obtained from different sources. The KPRA provided STS collection data for the KP province through official channels. Data related to total federal tax collection were downloaded from the official website of the FBR. Data pertaining to the control variables were downloaded from different sources such as the official website of the State Bank of Pakistan (SBP), the Economic Survey of Pakistan, 2021, and the Pakistan Bureau of Statistics (PBS).

3.3 Data Description: The study variables' data have been transformed into natural logarithmic and index form to avoid temporary volatility and ensure the comparability of these variables. This transformation also makes it easy to understand the econometric relationship among variables and interpret it effectively. The empirical model includes logarithmic, index-based, and percentage values of variables. A detailed summary of the variable definition, unit, and sources is given below in Table 3.1.

Table 3.1: Description of the Data

Symbol	Variable	Description	Unit/Transformation	Source
LSTSkp	STS Collection	Total annual STS collection of KP Province in millions	Natural logarithm of annual revenue in millions	KPRA
GVASG	Service sector growth of Pakistan	Annual growth in the services sector of Pakistan/Gross value added (GVA) of Pakistan at constant basic prices (2015–16 = 100)	Annual Growth Rate (%) of Pakistan	Pakistan Bureau of Statistics
INF	Inflation	CPI Inflation (General YoY (%))	Percentage (%)	State Bank of Pakistan (SBP)
CC	Control of Corruption of Pakistan	Control of Corruption Index of Pakistan	WGI estimate (between –2.5 and +2.5)/Index points	The World Bank's WGI database

DKPRA	Decentralization of STS Administration	Dummy variable capturing the establishment of KPRA	Dummy variable value (0 = FBR Administration; 1 = for KPRA administration)	constructed by Author
FDkp	Fiscal Decentralization	The ratio of a province's own-source revenue to a province's total revenue in KP Province measures provincial revenue autonomy	Percentage (0- 100%)	State Bank of Pakistan (SBP)

Measurement and Justification of Fiscal Decentralization (FDkp) Proxy: The literature review negates the presence of a universally accepted continuous index of STS-specific decentralization; therefore, this study measures fiscal decentralization by employing the ratio of KPK province's own-source revenue to its total provincial revenue, expressed as a percentage. This proxy measures the degree of provincial revenue autonomy and is widely employed as a measure for fiscal decentralization in previous studies.

3.4 Model Specification/Functional Form of Model

3.4.1 General Functional Specification: The general functional specification of the study is presented in equation 3.1.

Equation (3.1)

$$LSTS_{kp} = f(DKPRA, GVASG, FDkp, CC, INF)$$

Sales tax on services collection in KP Province is modeled as a function of the KPRA reform dummy, gross value-added services growth of Pakistan, control of corruption, and inflation.

3.4.2 Econometric Specification: The baseline econometric specification used to estimate the relationship between decentralization (institutional and fiscal decentralization) and STS collection is presented below in equation 3.2.

Equation (3.2)

$$LSTS_{kp} = \beta_0 + \beta_1 DKPRA + \beta_2 GVASG + \beta_3 CC + \beta_4 INF + \beta_5 FDkp + \epsilon_t$$

Symbols

- $LSTS_{kp}$

Description of Variables

Dependent variable

- DKPRA Explanatory variable
- GVASG, CC, FDkp, and INF Control variables
- β_0 : Intercept
- $\beta_1, \dots, \beta_5$: Long-term coefficient of STSkp with respect to DKPRA, GVASG, CC, FDkp, and INF.
- ε_t Error Term/Residual

3.5 Autoregressive Distributed Lag (ARDL) Estimation Model: The ADF and PP tests confirmed that some variables become stationary at level, while others attain stationarity at first difference, but none of them exhibit stationarity at second difference. Thus, the combination of mixed results suggests the application of the ARDL model. Thus, the stationarity test results suggest the application of the ARDL model, as it is suitable for a data set containing a mixture of I(0) and I(1) variables, provided that none are integrated of order I(2) (Pesaran et al., 2001; Bhatta et al., 2020). The ARDL baseline specification of the study is presented in equation 3.3.

Equation (3.3)

$$\begin{aligned} \text{LSTSkp} = & \alpha + \sum_{i=1}^p \varphi_i \text{LSTSkp}_{t-i} + \sum_{i=0}^{q1} \theta_{1j} \text{DKPRA}_{t-j} + \sum_{i=0}^{q2} \theta_{2j} \text{GVASG}_{t-j} + \sum_{i=0}^{q3} \theta_{3j} \text{CC}_{t-j} \\ & + \sum_{i=0}^{q4} \theta_{4j} \text{FDkp}_{t-j} + \sum_{i=0}^{q5} \theta_{5j} \text{INF}_{t-j} + \varepsilon_t \end{aligned}$$

Where;

- φ_i : reflects the estimated coefficient capturing the influence of lagged values of the dependent variable on its present value.
- θ_j : ($j = 1, \dots, 5$) reflects the coefficient capturing the influence of lagged values of the explanatory variable on its present value.

3.6 Error Correction Model (ECM) Specification: The ECM was presented by two prominent researchers named Robert F. Engle and Clive W. J. Granger in the year 1987 (Engle and Granger 1987). They were awarded the Nobel Prize in the field of economics for their invaluable contribution to time series data analysis. The empirical formula of ECM is given below in equation 3.4.

Equation (3.4)

$$\Delta LSTS_{kp} = \alpha + \sum_{i=1}^p \phi_i \Delta LSTS_{kp_{t-i}} + \sum_{j=0}^{q1} \theta_{1j} \Delta DKPRA_{t-j} + \sum_{j=0}^{q2} \theta_{2j} \Delta GVASG_{t-j} + \sum_{j=0}^{q3} \theta_{3j} \Delta CC_{t-j} \\ + \sum_{j=0}^{q4} \theta_{4j} \Delta FDKP_{t-j} + \sum_{j=0}^{q5} \theta_{5j} \Delta INF_{t-j} + \gamma ECM_{t-1} + \varepsilon_t$$

- **Gamma (γ):** represents the coefficient capturing the adjustment process from short-run deviations towards long-run equilibrium.
- **α** It is an intercept (constant).
- **ϕ (phi)** Is the coefficient that captures the short-term fluctuation in the current value due to variations in the lagged value of sales tax on services collection (LSTSKP) of the KP Province.
- **θ (Theta)** Is the coefficient reflecting the short-run variations in sales tax on services collection (LSTSKP) of the KP Province due to variations in the independent variables.
- **ECM_{t-1}** It indicates the proportion of previous period disequilibrium that is corrected in the present period.

3.7 Fully Modified Ordinary Least Squares (FMOLS) Robustness Estimation

For the confirmation of the robustness of the ARDL results, the baseline specification is estimated using the FMOLS estimator. The FMOLS was developed by Phillips and Hansen in 1990. It corrects autocorrelation and endogeneity in time-series cointegrated regression and provides more reliable and robust long-term coefficient estimates. If the results of the FMOLS are consistent with those of the baseline ARDL model in sign, magnitude, and level of significance, they are considered robust.

3.8 Estimation Strategy: The stationarity of the variables is examined by the ADF and PP tests. These tests are preferred over other tests and widely used in research studies. The test results suggest the application of the ARDL bound test for estimation of the long-run, while the ECM is used for estimation of the short-run relationship among the variables of the study.

3.9 Diagnostic and Stability Tests: This study used different stability and diagnostic tests for the examination of the adequacy and reliability of the estimated results of the ARDL model. The Breusch-Godfrey/Cook-Weisberg test and the Breusch–Godfrey LM tests are employed for checking heteroskedasticity and serial correlation in the model. The Variance Inflation Factor (VIF) test and the Ramsey test are used for checking multicollinearity and the functional form of the model. The histogram and Cumulative Sum of Recursive Residuals (CUSUM) test are used for checking the normality of the distribution of data and the stability of model coefficients.

4. Results and Discussions

4.1 Descriptive Statistics

The results of descriptive statistics demonstrate the behavior of the data of the study variables. It provides information about the mean, dispersion, range, symmetry, and normality of the data. Table 4.1 presents the statistical characteristics of the study variables.

Table 4.1: Results of Descriptive Statistics

	STS_{kp}	INF	CC	DKPRA	GVASG	FD_{kp}
Mean	9.64	9.51	-1.02	0.48	4.422	22.13
Median	6.27	7.92	-0.98	0.00	4.95	16.17
Maximum	40.60	30.77	-0.85	1.00	8.53	44.96
Minimum	0.22	2.53	-1.25	0.00	-1.21	3.92
Std. Dev.	11.82	6.55	0.11	0.51	2.29	14.06
Skewness	1.34	1.59	-0.65	0.08	-0.47	0.29
Kurtosis	3.73	5.78	2.47	1.01	3.28	1.44
Jarque-Bera	8.02	18.72	2.03	4.17	1.00	2.87

Probability	0.02	0.00	0.36	0.12	0.61	0.24
Sum	240.89	237.78	-25.44	12.00	110.56	553.35
Sum Sq. Dev.	3353.46	1019.13	0.29	6.24	125.64	4741.33
Observations	25	25	25	25	25	25

The tables present the mean, median, range, skewness, standard deviation, the Jarque–Bera statistic, kurtosis, and the number of observations. The table indicates adequate variation among variables; however, there is no evidence of extreme outliers in the observations. The tables indicate that the data set is appropriate for econometric analysis.

4.2 Stationarity Test Results

This study employs the ADF and PP unit root tests for checking the stationarity of data, as these tests are preferred over other tests and widely used in research studies. The selection of appropriate statistical models for the estimation of short- and long-term correlation among the study variables depends on the stationarity results of these tests. Table 4.2 presents the results of the ADF and PP tests.

Table 4.2: Results of the Augmented Dicky-Puller (ADF) and Phillips-Perron (PP) Unit Root Tests

Augmented Dicky-Puller (ADF) Test Results at Level				
		LSTS_{kp}	DKPRA	GVASG
Intercept	T. Statistic	-0.6034	-0.9167	-3.440
	P. Value	0.8508	0.765	0.0194
Trend & Intercept	T. Statistic	-3.9335	-2.0389	-3.860
	P. Value	0.0263	0.5517	0.0305
		CC	INF	FD_{kp}
Intercept	T. Statistic	-2.5092	-2.6293	-1.966
	P. Value	0.1275	0.1012	0.2984
Trend & Intercept	T. Statistic	-2.4128	-2.4997	-2.869
	P. Value	0.363	0.3252	0.1888
Augmented Dicky Puller (ADF) Test at First Difference				
		LSTS_{kp}	DKPRA	GVASG
Intercept	T. Statistic	-6.3522	-4.7958	
	P. Value	0.000	0.0009	
Trend & Intercept	T. Statistic	-6.2025	-4.6781	
	P. Value	0.0003	0.0057	
		CC	INF	FD_{kp}
Intercept	T. Statistic	-3.2091	-4.4584	-5.700
	P. Value	0.0345	0.0022	0.0001
Trend & Intercept	T. Statistic	-3.3613	-4.223	-5.580

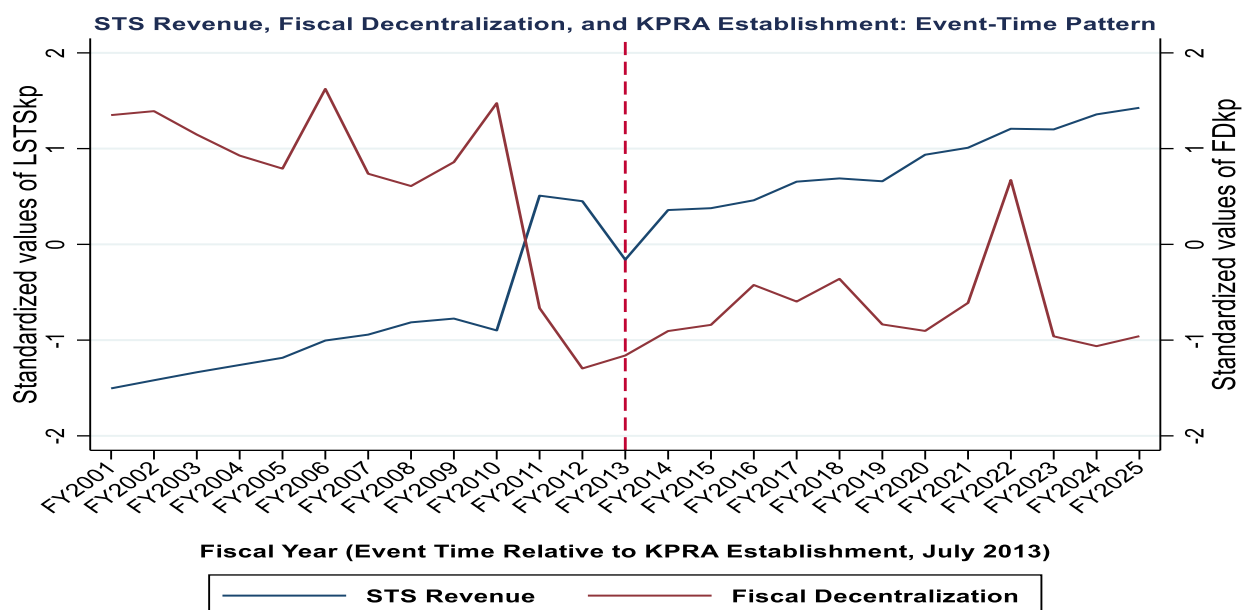
	P. Value	0.0853	0.0156	0.0008
Phillips Perron (PP) Test at Level				
		LSTSkp	DKPRA	GVASG
Intercept	T. Statistic	-0.545	-0.9167	-3.404
	P. Value	0.8654	0.765	0.021
Trend & Intercept	T. Statistic	-3.8757	-2.1013	-3.766
	P. Value	0.0296	0.5192	0.037
		CC	INF	FDkp
Intercept	T. Statistic	-2.0852	-2.5627	-1.802
	P. Value	0.2518	0.1143	0.371
Trend & Intercept	T. Statistic	-2.0385	-2.4141	-2.898
	P. Value	0.5519	0.3636	0.1802
Phillips-Perron (PP) Test at First Difference				
		LSTSkp	DKPRA	
Intercept	T. Statistic	-11.76	-4.7959	
	P. Value	0.000	0.0009	
Trend & Intercept	T. Statistic	-11.993	-4.6778	
	P. Value	0.000	0.0057	
		CC	INF	FDkp
Intercept	T. Statistic	-3.2373	-4.7824	-8.684
	P. Value	0.0306	0.001	0.0000
Trend & Intercept	T. Statistic	-3.2823	-4.5525	-9.688
	P. Value	0.0942	0.0075	0.0000

The ADF test results confirmed the stationarity of GVASG at level; however, for LSTSkp, the test results indicate stationarity at level with the trend and intercept option, while with the intercept option, the results indicate non-stationarity. However, the remaining variables attain stationarity after first differencing. Similarly, the PP test results also confirmed the same results, demonstrating the stationarity of GVASG at level and LSTSkp at trend and intercept, while the remaining variables become stationary at the first difference. Thus, the ADF and PP test results confirmed a mixed order of integration comprising I(0) and I(1) variables.

4.3 STS Revenue, Fiscal Decentralization, and KPRA Establishment, Event-Time Pattern

Figure 2 presents the standardized trajectory of STS revenue (LSTSkp) and fiscal decentralization (FDkp) relative to the establishment of KPRA in July 2013.

Figure 2: STS Revenue, Fiscal Decentralization, and KPRA Establishment, Event-Time Pattern



The vertical dashed line marks KPRA’s establishment and operationalization in July 2013. The figure indicates a noticeable increase in STS revenue after the establishment of KPRA, whereas fiscal decentralization falls sharply around the reform period and remains relatively lower thereafter. Overall, the figure indicates a descriptive overview of the post-KPRA evolution of both variables.

4.4 Results of the Auto-Regressive Distributed Lag (ARDL) Model: The findings provide evidence of a long-run relationship between the STS collection of KP province and the explanatory variables. Table 4.3 presents the estimated ARDL model results.

Table 4.3: Results of the Auto-Regressive Distributed Lag (ARDL) Model

Long-Run Equation				
Model Specification: Restricted Constant, without Trend				
Explanatory Variables (k)	Coefficient	Standard Error	t-value	P. Value
DKPRA	2.2321	0.3236	6.89879	0.0002
CC	-2.3614	1.6806	-1.40512	0.2028
GVASG	-0.119	0.0603	-1.97378	0.089
FDkp	-0.0397	0.0111	-3.56178	0.0092
INF	0.08701	0.0128	6.79004	0.0003
C	-1.6553	2.1112	-0.78403	0.4587
EC = LSTSKP - (2.2321*DKPRA - 2.3614*CC - 0.1190*GVASG - 0.0397				
*FDkp + 0.0870*INF -1.6553)				
F-Bounds Test		Null Hypothesis: No levels relationship		

Test Statistic	Estimated Value	Significance Level	Lower Bound, I(0)	Upper Bound, I(1)
			Asymptotic Critical Values: n=1000	
F-statistic Value	4.93292	10%	2.080	3.000
Explanatory Variables (k)	5	5%	2.390	3.380
		2.50 %	2.700	3.730
		1%	3.060	4.150
Number of Observations	23		Finite Sample (n=35)	
		10%	2.331	3.417
		5%	2.804	4.013
		1%	3.900	5.419
			Finite Sample (n=30)	
		10%	2.407	3.517
		5%	2.91	4.193
		1%	4.134	5.761

The ARDL bound test results indicate a significant positive long-term coefficient of the KPRA dummy, indicating a substantially higher STS collection during the post-decentralization period compared with the pre-decentralization period, after controlling for other variables. The findings indicate that the establishment of KPRA has a positive association with STS collection. Before FY 2013-14, FBR was administering STS collection, but the creation and operationalization of KPRA in July 2013 improved KP STS collection through broadening the tax base (adding new taxable services), enhancing taxpayers' registration, improving enforcement and audit mechanisms, digitalization of tax administration, and taxpayer facilitation services for voluntary compliance. The results are consistent with the assumptions of fiscal federalism theory, institutional theory, and previous research studies that support decentralization of tax, focusing on institutional reforms, enhancing administrative capacity, providing taxpayers' facilitation services, and establishing tax policies according to the fiscal capacity and economic conditions that play a pivotal role in revenue mobilization in the long run (Oates, 2008; Ebel & Yilmaz, 2002; Akol et al., 2025). Previous studies conducted for Pakistan also validate these findings. Atif & Nazir witnessed a favorable influence of STS devolution on tax buoyancy in KP Province (Atif

& Nazir, 2023). The results are also supported by the IMF, which endorses that the establishment of provincial authorities in Pakistan significantly increased provincial STS collection (East et al., 2017). The results also show a significant negative association of fiscal autonomy (FDkp) with STS collection. The long-run coefficient shows a significant negative value of -0.039, which does not mean STS devolution causes a decrease in STS collection; rather, it measures KP provincial revenue autonomy during the post-devolution period. Actually, after the 7th NFC award, the federal transfer amount to the KP province increased substantially, leading to a huge increase in total revenue as compared to the own-source revenue of the KP province. Thus, the ratio of provincial autonomy declined, although the establishment of KPRA significantly contributed to the increase in STS collection. The results indicate that after the 7th NFC award, the KP provincial dependence on intergovernmental transfers increased despite the increase in provincial STS collection, which is quite low as compared to the federal transfer amount. From these findings, we conclude that only an increase in fiscal autonomy without a strong institutional framework and administrative capacity of the tax-collecting authority may not necessarily increase tax collection. The results are aligned with the soft budget constraint hypothesis that suggests that provincial dependence on intergovernmental transfers may suffer their own-source revenue generation capacity (Pisauro, 2001; Kornai et al., 2003). The IMF assessment also revealed that provincial governments in Pakistan have limited incentive for their own-source revenue due to heavy reliance on federal government fund transfers.

The findings suggest that institutional quality is a key determinant of the STS collection of KP Province. The significant positive long-run coefficient value of DKPRA indicates the positive association of the establishment of the provincial tax authority (KPRA) with STS collection in the long-run, while the statistically significant negative long-run coefficient of fiscal autonomy (FDkp) suggests that only decentralization of tax collection responsibility without strengthening the institutional capacity of tax-collecting agencies will not be effective in achieving the desired long-term revenue target.

Furthermore, an increase of one percent in inflation (INF) is associated with an increase of 0.087 percent in sales tax on services (LSTSkp) collected in the KP province. The results support the evidence reported by Patoli et al. (2012) for the country of Pakistan. The reason for the positive relationship between LSTSkp and INF is very simple; when the inflation rate increases, prices increase, resulting in a rise in the value of services, which ultimately reflects an increase in sales tax on services collected in the KP province (LSTSkp). The remaining two variables, services growth (GVASG) and control of corruption (CC), indicate an insignificant negative relationship with LSTSkp in the long run.

Table 4.3 indicates values ranging from 2.40 to 4.13 at the 10% to 1% significance level for the lower-bound value $I(0)$ for the finite sample with $n = 30$. The upper bound values range from 3.52 to 5.76 at the 10% to 1% significance level. The estimated F-statistic value of 4.93 is greater than the 5% upper bound critical value of 4.2; however, it is lower than the 1% upper bound value of 5.76, indicating evidence of a long-run relationship among the dependent and explanatory variables of the study at the 5% significance level only.

4.6 Error Correction Model (ECM) Test Results: The ECM is employed for the investigation of the short-term and long-term relationship among the explanatory variables and STS collection in the KP province, and it also shows the speed of correction in the dependent variable towards its long-term equilibrium state. The estimated findings of the ECM model, which are presented in Table 4.4.

Table 4.4: Results of The Error Correction Model (ECM)

Error Correction Model (ECM) Results				
Model Specification: Restricted Constant, without Trend				
Explanatory Variables	Coefficients	Standard Error	T. Statistic	P. Value
D (LSTSKP (-1))	0.30553	0.12039	2.53786	0.0388
D(DKPRA)	0.54402	0.31413	1.73183	0.1269
D (DKPRA (-1))	-1.87586	0.41089	-4.56535	0.0026
D(CC)	0.10446	0.85990	0.12148	0.9067
D (CC (-1))	5.77319	1.09544	5.27018	0.0012
D(GVASG)	0.00603	0.02462	0.24511	0.8134
D (GVASG (-1))	0.16825	0.02892	5.81738	0.0007
D(FDkp)	-0.04110	0.00638	-6.43969	0.0004
D(INF)	0.06263	0.01530	4.09347	0.0046

CointEq(-1)*	-1.53916	0.19220	-8.00799	0.0001
Coefficient of Determination (R ²)	0.88282	Mean of the dependent variable		0.22029
Adjusted coefficient of R ²	0.80170	Standard Deviation of dependent variable		0.60734
Standard Error of regression	0.27046	AIC		0.52161
Residual Sum of squares (RSS)	0.95091	Schwarz Information criterion (SIC)		1.01530
Log-likelihood Value	4.00152	Hannan-Quinn Information criterion		0.64577
Durbin-Watson statistic	1.48916			
* The p-value does not apply to the t-bounds distribution.				
Bounds Test for Cointegration		Null Hypothesis: No long-run relationship		
Test Statistic	Estimated Value	Significance Level	Lower Bound, I(0)	Upper Bound, I(1)
F-statistic	4.9329	10%	2.08	3
k	5	5%	2.39	3.38
		2.50%	2.7	3.73
		1%	3.06	4.15

The findings revealed a highly significant value of the error correction coefficient (ECT), demonstrating that approximately 143% of the previous year's disequilibrium is adjusted during the current fiscal year. It indicates a rapid adjustment speed toward equilibrium in the long term. As the estimated coefficient of the ECT falls within the range of -2 to 0, the adjustment process is stable. The highest value suggests that the system shows overadjustment (overshooting) initially before gradually converging to its long-term equilibrium (Pesaran et al., 2001). The high value of the ECT may be due to the use of annual data for analysis, even though STS is collected monthly; specifically, monthly data for the pre-decentralization period (2000-01 to 2012-13) are unavailable, leading to the conversion of monthly data into annual data for the post-decentralization period (2013-14 to 2024-25). Thus, each annual observation reflects a 12-month cycle (12 periods), which might be a plausible explanation rather than definite evidence, as there is no direct method for measuring temporal aggregation without monthly STS collection data covering the entire study period.

The findings indicate a significant positive correlation of STS collection (LSTSkp) with its lagged collection amount in the short run. The findings indicate a 0.30% growth in STS collection in the current year due to a 1% increase in its previous year's collection amount in the short run. The results also show

a significant positive correlation of LSTSkp with DKPRA, GVASG, and CC in the lagged period in the short run. The coefficient of (-1.87) revealed that institutional transition temporarily declined STS collection in the short run, whereas in the long run, it resulted in a positive influence on STS collection, as evidenced by a significant positive long-run coefficient value of the bound test for the KPRA dummy. The coefficient of GVASG shows that a 1% rise in the total value of services in the lagged period causes a 0.17% rise in STS collection in the current year (in the short term), holding other factors constant. Similarly, the coefficient (5.77) revealed that an improvement of one unit in the control of the corruption index in the lagged year resulted in an increase of 5.77% in STS collection in the current year in the short run.

Furthermore, the results reveal that a 1% increase in inflation during the current year is associated with a 0.06% rise in STS collection in the current year (short term), indicating a positive short-term relationship between the two. The significant negative FDkp coefficient of -0.041 indicates that a one-percentage-point rise in fiscal autonomy in the current year is associated with a 0.04% decrease in STS collection in the current year (short run) while keeping other factors constant. The findings also show an insignificant positive relationship between LSTSkp and DKPRA and CC in the current year. The estimated R^2 of 0.88 reveals that about 88% of changes in the dependent variable are explained by the model. Moreover, the Durbin-Watson statistic (1.49) indicates no significant serial correlation in the model.

4.7 Diagnostic and Stability Test Results

4.7.1 Heteroscedasticity Testing Results: The Breusch-Godfrey test confirmed the absence of heteroscedasticity in the model residuals. Table 4.5 summarizes the estimated results of the Breusch-Godfrey test for heteroscedasticity.

Table 4.5: The Breusch-Pagan-Godfrey Heteroscedasticity Test Results

F-Test Statistic	0.38754	P-value for F-Test (15,7)	0.942
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Observed R^2 Statistic	10.4348	Chi-Squares P-Value (15)	0.792
Scaled explained Sum of Squares	0.83084	Chi-Squares P. Value (15)	1.000

4.7.2 Serial Correlation Diagnostic Test: The Breusch–Godfrey LM test revealed mixed results; the F-statistic confirmed no autocorrelation, reporting a p-value of 0.42, while the chi-square test reported autocorrelation, with a p-value of 0.035. As the sample size is small, more weight is given to the F-test, which confirmed the absence of autocorrelation in the residuals of the selected model. The diagnostic outcomes obtained from the Breusch-Godfrey LM procedure for detecting serial correlation are summarized in Table 4.6.

Table 4.6: Breusch-Godfrey LM Diagnostic Results for Serial Correlation

F-Test Statistic	1.0241	P-value for F-Test (2,5)	0.424
Observed R^2 Statistic	6.6837	Chi-Square P-Value (2)	0.035

4.7.3 Multicollinearity Diagnostic Test: Multicollinearity among the explanatory variables is assessed using the Variance Inflation Factor (VIF). The findings of the VIF test confirmed that all explanatory variables have VIF values below 10, suggesting that no serious multicollinearity exists among the model’s explanatory variables. Table 4.7 reports the diagnostic results obtained from the VIF test.

Table 4.7: The VIF Multicollinearity Test Results

Symbols	R-squared (R ²)	one	Tolerance (1- R ²)	VIF (1/1-R ²)
DKPRA	0.67	1	0.33	3.03
FDkp	0.63	1	0.37	2.70
GVASG	0.3	1	0.7	1.43
INF	0.22	1	0.78	1.28
CC	0.52	1	0.48	2.08

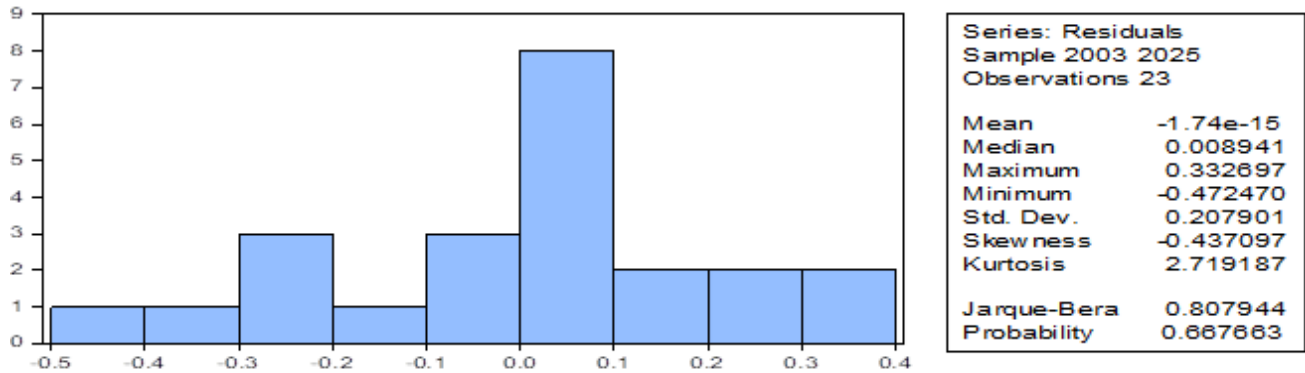
4.7.4 Ramsey Test: The Ramsey test results confirmed the absence of a functional form problem in the selected model. Findings of the Ramsey test are reported in Table 4.8.

Table 4.8: Ramsey RESET Test Results

	Estimated Value	Degree of freedom	P. Value
t.value	1.3424	6	0.228
F-value	1.8019	(1, 6)	0.228

4.7.5 Data Normality Test Results: The histogram results revealed that the residuals are normally distributed, and the residuals of the model satisfy the normality assumptions. Figure 3 below presents histogram test results of the residuals.

Figure 3: Residual Normality Test Results Based on the Histogram and Jarque–Bera Test



4.7.6 Results of the Cumulative Sum of Recursive Residuals (CUSUM) Test: The CUSUM test results indicate that the cumulative sum is close to zero and within the lines, which confirms that the estimated coefficients exhibit stability in the entire sample period, demonstrating a structurally stable long-term association among the dependent and explanatory variables within the ARDL framework. Figures 4 and 5 below present the graphical representations of the CUSUM and CUSUMSQ tests.

Figure 4: Graphical Representation of the Findings of the CUSUM Test

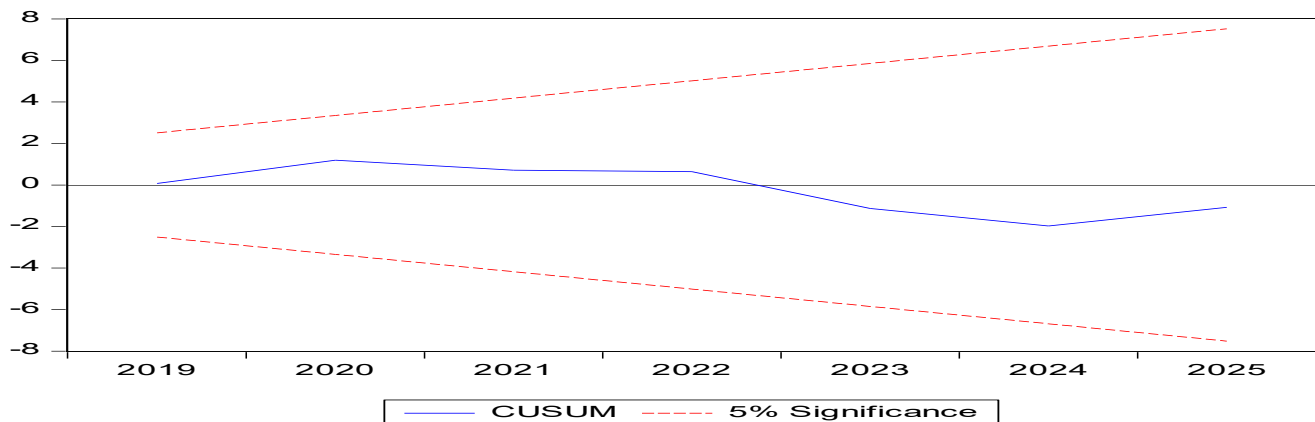
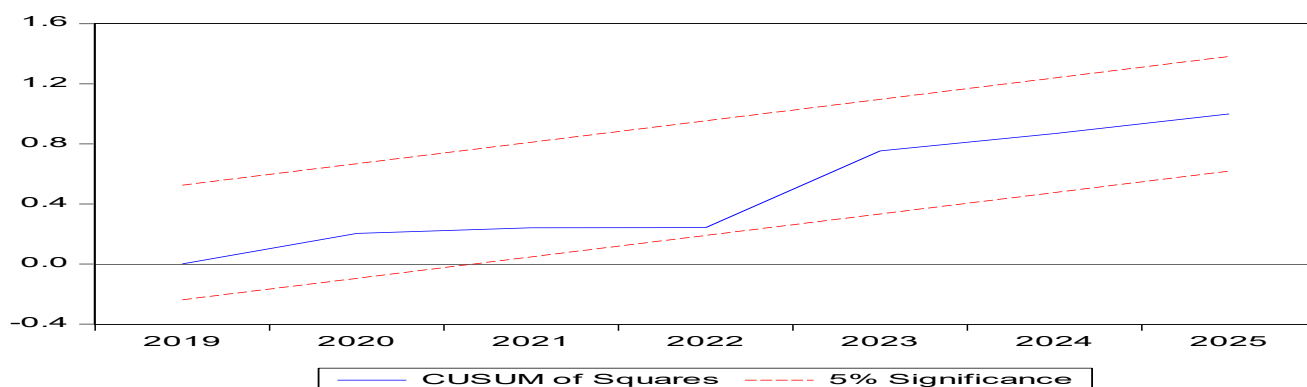


Figure 5: Graphical Representation of the CUSUMSQ Test results



4.8 Robustness Analysis by Using the Fully Modified Ordinary Least Squares (FMOLS) Estimator.

To confirm the robustness of the ARDL findings, the long-term baseline model is re-estimated through the FMOLS approach. Table 4.9 reports the complete FMOLS results.

Table 4.9: FMOLS Estimation Results

FMOLS Cointegration Results						
Selected VAR lag (user) = 0			Number of observations = 24			
Kernel Function = Bartlett			R-Squared = 0.86840			
Bandwidth Selection (Newey-West) = 11.597			Adjusted R-Squared = 0.83184			
			Standard error = 0.71139			
			Long run Standard error = 0.34544			
LSTSkp	Coefficients	Standard error.	z-statistic	P. Value	[95% confidence interval]	
CC	-1.718	0.938	-1.83	0.067	-3.557	0.122
DKPRA	2.216	0.242	9.14	0.000	1.741	2.691
GVASG	0.009	0.037	0.25	0.804	-0.064	0.082
FDkp	-0.053	0.008	-6.24	0.000	-0.069	-0.036
INF	0.041	0.013	3.27	0.001	0.016	0.066
_cons	-0.862	1.16	-0.74	0.457	-3.136	1.411

The overall results of the FMOLS estimation are highly consistent with the findings of the selected ARDL bound test, as shown in Table 4.3. The findings of FMOLS estimates demonstrate that the coefficients of all explanatory variables, including the main explanatory variables (DKPRA and FDkp) and control variables (GVASG, INF, and CC), retain the same sign and statistical significance as observed in the ARDL long-term bound test results. The consistency in findings of both estimations

demonstrates the robustness of the empirical results, and the study conclusions or results are not sensitive to long-term estimation techniques. Thus, the results remain reliable under alternative estimation techniques.

5.1 CONCLUSION

The findings of the ARDL bound test indicate a significant positive long-term coefficient of the KPRA dummy, indicating a substantially higher STS collection in the post-decentralization period than in the pre-decentralization period. The findings suggest that the establishment of KPRA has a positive relationship with STS collection in the KP Province. Before FY 2013, FBR was administering STS collection, but the creation and operationalization of KPRA in July 2013 improved KP STS collection through broadening the tax base (adding new taxable services), enhancing taxpayers' registration, improving enforcement and audit mechanisms, digitalization of tax administration, and taxpayer facilitation services for voluntary compliance.

The results also show a significant negative relationship between fiscal autonomy (FDkp) and STS collection, which does not mean STS devolution causes a decrease in STS collection; rather, it measures KP provincial revenue autonomy during the post-devolution period. Actually, after the 7th NFC award, the federal transfer amount to the KP province increased substantially, leading to a huge increase in total revenue as compared to the own-source revenue of the KP province. Thus, the ratio of provincial autonomy declined, although the establishment of KPRA significantly contributed to the increase in STS collection. The results indicate that after the 7th NFC award, the KP provincial dependence on intergovernmental transfers increased despite the increase in provincial STS collection, which is quite low as compared to the federal transfer amount. From this, we conclude that only an increase in fiscal autonomy without a strong institutional framework and administrative capacity of the tax-collecting authority may not necessarily increase tax collection. The ECM results indicate a high speed of convergence towards the long-term equilibrium state (temporary overshooting), while the findings of FMOLS confirmed the reliability of the ARDL model results, indicating that the results are not sensitive

to alternative estimation techniques. Overall, the findings provide new evidence from Pakistan on the joint role of fiscal autonomy and institutional decentralization in STS collection, highlighting the importance of both fiscal capacity and dedicated revenue administration in provincial tax administration. The results suggest that institutional quality is more important than fiscal decentralization, and that only decentralization of tax collection responsibility without strengthening the institutional capacity of tax-collecting agencies will be ineffective in achieving the desired long-term revenue target.

5.2 Policy implications

This study suggests that the government of Khyber Pakhtunkhwa should emphasize enhancing institutional capacity rather than relying only on STS devolution. The significant positive sign of the coefficient indicates that the KPRA establishments have a positive association with STS collection in the long term, while the significant negative coefficient of FDkp indicates that merely STS devolution without a specialized and capable provincial tax-collecting institution may adversely affect STS collection in the long term. Therefore, along with STS decentralization, the government of KP should emphasize strengthening, innovating, and modernizing the operational capacity of KPRA through investment in capacity building of collectorate staff, adopting modern risk-based audit and enforcement systems, a data-driven taxpayer information system, enhancing taxpayers' facilitation services, and establishing tax policies according to the fiscal capacity and economic conditions of taxpayers (IMF, 2019; Akol et al., 2025; The World Bank, 2019).

The KPRA should work on the development of an integrated taxpayer database that effectively links FBR, banks, NADRA, withholding agents, and other provincial regulatory agencies for the identification of unregistered entities (service providers and withholding agents) involved in taxable services provision and reconciles declarations of registered persons for controlling tax evasion. The KPRA should develop specific sector-wise auditing wings and deploy specialized, trained staff in the relevant field for special audit purposes instead of using a generalized audit mechanism. Therefore, the devolution of STS,

combined with the establishment of a specialized autonomous provincial tax-collecting agency that has capable administration, will result in significant long-term growth in provincial revenue.

In addition, it is also pertinent to mention that the government should strengthen the institutional autonomy of KPRA by ensuring that key statutory positions such as Director General, Legal Advisors, Additional Collectors, and Directors are filled by merit-based appointment and promotion in accordance with KPRA APT Regulations, 2017, rather than posting on deputation from the general bureaucracy. As these are policy-level positions and directly involved in policy-level decisions regarding the formulation of tax policies, legislative drafting, review and amendment of tax laws, tax rules and regulations, legal advisory services, statutory interpretation, revenue litigation planning, audit and enforcement strategies, capacity building of staff, recruitment and selection of capable employees, intergovernmental coordination, and institutional governance, all these require specialized knowledge and expertise of tax laws and related fields. A lack of highly professional and technical staff at the higher management level may cause the performance of the provincial revenue authority to suffer in the long run.

The amendments to section 40 (insertion of 40(1)(a)) and section 30 (insertion of 30(3)) in the KP Finance Act 2013, through finance bills 2019 (effective from July 2019) and 2021 (effective from July 2021), clearly indicate deficiencies in the legislative drafting of the KP Finance Act 2013, causing a significant loss to the government exchequer of the KP province. These amendments not only substantially increased litigation costs, but the Supreme Court of Pakistan declared that they have no retrospective effect and cannot be applied to the period before June 2021; as a result, the significant recoveries from the withholding agents were suspended and further adjudication for that period was halted, leading to a considerable loss for the period before June 2021; accordingly, the huge amount of recoveries from the withholding agents was suspended, and further adjudication about that period was stopped, causing a huge loss to the government exchequer of the KP province. Filling these higher management posts on merit will strengthen the tax professional cadre, improve the quality of tax

legislation, reduce litigation costs, strengthen institutional capacity, and safeguard provincial tax revenue collection.

5.3 Limitation of the Study

Although the study provides meaningful policy guidelines and academic insights, this study has some limitations, including non-availability of data, generalizability, and financial and time constraints. First, the monthly data on sales tax on services collection of KP Province from July 2001 to June 2013 are not available. During this period, FBR was responsible for the levy and collection of STS KP on behalf of the KP province. The efforts over 1.5 years ended without fruitful results in obtaining monthly sales tax on services collection data from both the FBR and the KPRA, and both insisted that they lacked the monthly bifurcated record of STS for the mentioned period. Ultimately, the monthly data for the post-decentralization period (July 2013 to Jun 2025) was also converted into annual data for time series analysis, which constitutes a limited sample with 24 observations only.

Second, the KPRA dummy may capture not only the establishment of KPRA but also other administrative and policy reforms undertaken during this period; thus, the estimated effect should be treated as a combined effect of post-decentralization administrative and policy reform rather than only the establishment of KPRA.

Third, the fiscal decentralization index reflects total provincial fiscal autonomy instead of only STS decentralization. Furthermore, the index is constructed as the ratio of own-source revenue of the KP province to its total provincial revenue, expressed as a percentage, and STS collection forms part of own-source revenue along with other sources of revenue; therefore, the index is not entirely independent of the dependent variable and should be treated as provincial fiscal autonomy instead of STS decentralization.

Despite the aforementioned limitation, the reliable results of the study will help policymakers to formulate effective policies and strategies, both long-term and short-term, for improving sales tax on services collection.

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