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Empirical Implications of Decentralization Dimensions and the Role of Political Institutions in the Economic Growth of Pakistan

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Abstract

Decentralization is the fundamental policy variable used to enhance the allocative efficiency through public spending / tax priorities, subject to the local demand. The current study evaluates the impact of the various dimensions of decentralization on the economic growth of Pakistan for the years 1972-2018. Ng-Perron tests and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) were applied to fix the unit root problem in the time series data. To find the cointegration among decentralization, the role of institutions, and economic growth the Autoregressive Distributed Lag Approach (ARDL) was used. The outcomes suggested that tax decentralization is a growth promoting policy. On the contrary, administrative and political decentralization negatively affect the economic growth. The analysis shows that political freedom also has a growth retarding impact on the economy. The current study is useful regarding the policy implications of the process of decentralization.

Keywords: cointegration, decentralization, economic growth, political freedom
JEL Classification: H77, D72, O47, C22

Introduction

Fiscal decentralization has been a growing trend in the developing and emerging economies over the course of last three decades (Filippetti & Sacchi, 2016). Most economies have restructured their political institutions and fiscal sovereignty at the lower tiers of the government, while aiming to enhance productivity and ultimately economic growth. There is a complex link between different dimensions of decentralization and economic growth. The available

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literature fails to elaborate this link theoretically as well as empirically. A number of direct and indirect channels are available to find the association between macroeconomic development and fiscal federalism (Martinez-Vazquez & McNab, 2003). Indeed, a number of studies have evaluated the mixed results of this phenomenon empirically (e.g., Bodman, 2011).

Generally, decentralization has three dimensions including fiscal decentralization, administrative decentralization and political decentralization (Schnieder, 2003). Fiscal decentralization is positively linked with economic growth. Moreover, it raises the possibility of competition among regional governments and allows for the efficient allocation of resources (Tiebout, 1956). The other two dimensions of decentralization, that is, administrative and political decentralization have bipolar impacts on economic growth (Schnieder, 2003; Rodríguez-Pose & Ezcurra, 2010). The impact of administrative decentralization and political decentralization on economic growth varies based on the measuring indices of decentralization. The most frequently used indices of administrative and political decentralization are designed by (Schnieder, 2003; Hooghe et al., 2002).

Pakistan is a federation and the taxation system is centralized, even though the government of Pakistan has made considerable efforts to strengthen the decentralization mechanism (Iqbal et al., 2012). Federal and provincial governments started sharing the tax revenue immediately after the independence of Pakistan. National Finance Commission (NFC) was constituted in 1951 for revenue sharing and distribution among the national and subnational governments, although it became functional under the constitution of 1973. Eight NFC awards have been announced till 2011. Before NFC awards, there was the Niemeyer Award in 1947, the Raisman Award in 1952 and the One Unit Formula in 1961 and 1965 for sharing the revenue. Conversely, political decentralization could not be proceeded. Three tiers of government exist in Pakistan, that is, the federal, provincial and the local government tiers. Political powers were not transferred from the provincial to the local bodies in the true sense. Linder (2009) specified decentralization as a helpful tool to formulate a structure that is useful in bringing the state closer to the citizens. In the case of political decentralization,

when powers are devolved to the local units, the chances of boosting the local initiatives, improvements in the public service delivery and organizing an efficient administration appears to be high.

We relied on the index of political freedom (PF) published by the freedom house to define the institutional settings. We argued that decentralization has a stronger effect on the economic performance of Pakistan within an institutional structure which provides a higher level of subnational autonomy. To date, hardly any study has been examined the impact of fiscal, administrative and political decentralization on the economic performance of Pakistan. The aim of this paper is to explore the impact of decentralization on growth regulated by the presence of political institutions in Pakistan. Decentralized arrangements are those in which the central bodies have a minor role in the management of the day to day affairs of the local bodies and institutions. Subnational level governments are granted more autonomy in administration which shifts the burden of providing public services towards them. It is critical to study the different aspects of decentralization in order to recognize the exclusive features of all of its dimensions which differentiate them from each other. On the other hand, it may be acknowledged that all of these dimensions are closely related to each other. The theoretical framework of the current study is the endogenous growth model incorporated with decentralization and institutions.

The structure of the remaining paper is as follows. Section II consists of the literature review on decentralization and growth outcomes. Section III addresses the theoretical framework, data and econometric issues. Section IV elaborates the empirical results and discussion and finally, Section V states the conclusion.

Literature Review

The fundamental justification of decentralization is that it brings decision-making closer to the local citizens. Decentralization enhances the redistribution of resources by prioritizing the public spending, subject to the local demand (Tiebout, 1956; Coase, 1960; Oates, 1985). The information regarding the functioning of public institutions in a decentralized system is accessible to the local people and it enables them to demand for public services, effectively. If citizens are taxed for the local services and the officials are held

accountable for their arrangements, it can create more incentives for the better provision of quality goods and services.

Fiscal federalism may be related to different levels of efficiency in management and organization instead of centralization. The growth model of Solow-Swan (1956) is based on different levels of technology and total factor productivity. Hence, countries may show variations in their growth rate with the progress of decentralization. In a federal system, the innovation process is prompted efficiently from a theoretical perspective (Feld et al., 2012). Wallis (2000) argued from the historical perspective that fiscal decentralization (FD) is an imperative process that triggered the American economy from 1790 to 1990. Moreover, it can lead to greater fiscal stability and lower inflation while influencing growth (Thornton, 2007; Schaltegger & Feld, 2009; Baskaran & Feld, 2012).

The literature explains the reasons behind the poor public service delivery to the local citizens. Economies of scales related to the central government may drop with the process of decentralization (Oats, 1972), whereas Smith (1985) argued that the local governments are technically deprived as compared to the central government. Hence, they are unable to manage efficient public service delivery. In another study, Bardhan and Mookherjee (2006) evaluated the misallocation of public resources at the local level as these resources are captured by strong groups or the local elites in the decentralized system. Some researchers focused on the structure of political institutions which remains a prerequisite of an efficient decentralization mechanism (Agrawal & Ribot, 1999; Rodden et al., 2003; Anderson, 2003). They recommended the presence of the local governments and institutions to sustain a functioning democracy, with the condition of the accountability of politicians for a successful decentralized system. Public administration scholars and economists stress the local government's management ability and governance as necessary pre-conditions of efficient decentralization aimed to respond to the local demands (Rondinelli et al., 1989; Grindle, 2007). The structure of the society itself is an important determinant of successful decentralization which depends on the actions of citizens instead of political and administrative structures. Moreover, the public sector remains under pressure from the various interest groups in the

society to provide superior public services to the citizens (Putnam, 1993; Faguet, 2001; Heller, 2001).

The positive effect of decentralization on well-being can be traced through prior studies. Kruse et al. (2012) determined the beneficial impact of the decentralization of the healthcare spending on successful healthcare provision for the poor in Indonesia. Baiocchi (2001) indicated that the welfare of the local citizens improved as a result of decentralization through the process of participatory budgeting in Brazil. Bjornskov et al. (2008) showed that the decentralization of revenue collection and spending improves the well-being, whereas more local autonomy is gained through public consumption expenditures. Similarly, Diaz-Serrano and Rodriguez-Pose (2012) found the positive impact of decentralization on individual happiness for twenty-nine European countries. Some studies equated effective decentralization with the structure of political institutions to enhance the provision of local public services and welfare (Ribot, 2007; Ganaie et al., 2018).

Crook and Manor (1998) emphasized the importance of political institutions to mitigate the impact of decentralization reforms on the provision of public services. Functional local governments with accountability are the prerequisite of strong democratic institutions (Bardhan & Mookherjee, 2006). Due to the lack of accountability, it may create rent-seeking behavior in the provision of public goods and services (Seabright, 1996). Riker (1964) suggested the presence of political institutions that ensure accountability in the local election, leading to the development of the association between the local government and electoral politics. The institutional mechanism is created through contestable and competitive local elections aimed to capture the local political elites and to counter corruption (Rose-Ackerman, 2008; Nguyen et al., 2019).

The local studies conducted in Pakistan have addressed the growth effect of fiscal decentralization (FD) only. Malik et a1. (2007) evaluated the effect of FD on Pakistan's economic growth. The study examined the positive contribution of FD in the economic development of Pakistan for the time period 1971-2005. Khattak et al. (2010) considered FD as a significant policy variable aimed to ensure governance and to promote economic efficiency by giving

more fiscal autonomy to the provinces. For empirical findings, time series data was applied over the duration 1980-2007. Raza and Hina (2016) investigated the direct and the indirect impacts of FD on the economic growth of the provinces of Pakistan through spatial dependence. The outcomes of the study indicated that expenditure decentralization influences the provincial growth negatively, while revenue decentralization has a positive impact.

Consequently, the current study is an effort to determine association among various dimensions of decentralization and the macroeconomic development of low income countries alike Pakistan besides the institutional settings. It is also abundantly clear from the literature review that only a limited amount of literature is available on transitional and developing economies that establishes a link between fiscal decentralization and the economic performance. This relationship requires more research work to offer clear designs for the policymakers to develop and recommend the effective implementation of decentralization in underdeveloped countries. Additionally, the current study investigates the issue of decentralization for the developing economies in general and focuses particularly on the significant determinants that positively enhance the economic growth of Pakistan.

Theoretical Framework

Fiscal decentralization depicts the transference of the responsibility of revenue (tax) generation from the federal to the provincial government. Several growth models on endogenous theory are used to find relationship of decentralization with economic development (Davoodi and Zou, 1998; Thieben, 2003; Lin & Liu, 2000), undertaking the method of Ordinary Least Square (OLS). The growth model used in this stud was originally developed by (Levine & Renelt, 1992). However, these empirical models have been applied on limited sample size that caused endogeneity. Prior research have also observed this issue employing different methods including instrumental variable technique (Iimi, 2005), regression models (Rodríguez-Pose & Kroijir, 2009) following (Woller & Phillips, 1998), etc. For the purposes of the current study, a simple form of the model is given below:

$LGDPPCt = F(TD_t, PF_t, LGFCF_t, LF_t, LAID_t, PD_t, PGR_t)$ \hfill (A)

LGDPPCt = F(AD$_t$, PF$_t$, LGFCF$_t$, LF$_t$, LAID$_t$, PD$_t$, PGR$_t$)　　(B)
LGDPPCt = F(PD$_t$, PF$_t$, LGFCF$_t$, LF$_t$, LAID$_t$, PGR$_t$)　　　(C)

Where

LGDPPC$_t$ is the measure of the GDP
TD = Tax Decentralization,
AD = Administrative Decentralization
PD = Political Decentralization
LF = Measure of the Total Labor Force
GFCF = Gross Fixed Capital Formation
AID = Foreign Aid
PGR = Population Growth Rate
$t = 1, 2, \ldots, N$.

In the growth related literature, numerous control variables have been extensively used (Barro & Lee, 1996).

The model of tax decentralization for Pakistan was developed as follows:

Model 1
$$LGDPPC_t = \beta_0 + \beta_1 TD_t + \beta_2 PF_t + \beta_3 LF_t + \beta_4 LGFCF_t +$$
$$\beta_5 LAID_t + \beta_6 PD_t + \beta_7 PGR_t + \gamma_t \qquad (1)$$

The model of administrative decentralization for Pakistan was developed as follows:

Model 2
$$LGDPPC_t = \beta_0 + \beta_1 AD_t + \beta_2 PF_t + \beta_3 LF_t + \beta_4 LGFCF_t +$$
$$\beta_5 LAID_t + \beta_6 PD_t + \beta_7 PGR_t + \gamma_t \qquad (2)$$

The model of political decentralization for Pakistan was developed as follows:

Model 3
$$LGDPPC_t = \beta_0 + \beta_1 PD_t + \beta_2 PF_t + \beta_3 LF_t + \beta_4 LGFCF_t +$$
$$\beta_5 LAID_t + \beta_6 PGR_t + \gamma_t \qquad (3)$$

Unit Root Tests

KPSS Test

Kwiatkowski et al., (1992) proposed a unit root test. It was designed in a way that the unit root problem pointed to the

alternative hypothesis rather than towards the traditional null hypothesis. The KPSS test is named after its authors. It is argued that the data remains stationary by design even if the unit root is absent from the data (Lipsey & Sjöholm, 2011). The general specification of KPSS is as follows:

$$x_t = \theta_t + \omega_t + \varepsilon_t$$
$$\omega_t = \omega_{t-1} + \mu_t$$

The null hypothesis is as follows:

$$H_0: \sigma_\mu^2 = 0$$

Nabeya and Tanaka (1988) discussed the special case of the above specification by stating the null hypothesis as having constant parameters, while the parameters of the alternative hypothesis contain a random walk:

$$x_t = \alpha_t y_t + \delta' z_t + \varepsilon_t$$
$$\alpha_t = \alpha_{t-1} + \mu_t; \ \mu t \sim \text{IID}(0, \sigma\_\mu\text{\textasciicircum}2) \text{ with test statistic:}$$
$$LM = \sum_{t=1}^{m} S_t^2 / s_\varepsilon^2$$

Where the sum of error terms St is defined as:

$$S_t = \sum_{i=1}^{t} \varepsilon_i$$

The above LM test is effective only if the μt are IID, therefore, the need for the KPSS modified test-statistic. KPSS proposes a modification to the denominator of the LM-stat to consider the general case. The stationary test recommends the use of Newey-West Hetroskedasticity and Autocorrelation Corrected (HAC) long-run estimation of the variance, instead of applying the error variance.

The modified KPSS statistic is as follows:

$$LM = \sum_{t=1}^{m} S_t^2 / s^2$$

It is often recommended that KPSS can be applied to endorse the results of Philip-Peron (PP) and ADF tests.

Ng-Perron Unit Root Test

Ng and Perron ([2001](#)) extended the M-tests of Elliott, Rothenberg, and Stock ([1996](#)) to modify the Z-tests. It illustrated that the adjusted power of MZ-tests rises considerably when Generalized Least square (GLS) and Modified Information Criteria (MIC) are used by detrending the data. It indicates significant power improvements, specifically when MA expressions lie in the fundamental Data Generating Process (DGP) using Monte Carlo (MC) tests to apply DF-GLS, if lag length is determined through MIC. Ng and Perron ([2001](#)) proposed a new test combining GLS detrending with SD.

In order to implement the test, the estimation of Maximum Likelihood (ML) $ARIMA(p.1,1)yt$ is as follows:

$$\Delta y_t = \varphi + \sum_{j=1}^{p-1} \theta_j \Delta y_{t-j} + \eta_t - \emptyset \eta_{t-1}$$

and regain $\theta^{\wedge}{}_j$

The test-statistic is as follows:

$s^{\wedge}{}_\varphi = \epsilon'^{\wedge}\ W\epsilon^{\wedge}\ \sigma^{\wedge 2}_\epsilon\ \sigma^{\wedge 2}_\epsilon = \epsilon'^{\wedge} \times \epsilon^{\wedge}/$ T runs a consistent estimate $\sigma\_\epsilon^{\wedge}2$; W is a TxT matrix such that $Wi, j = \min(i, j)$ $W_{ij} = \min(i,j)$ and the residuals $\epsilon^{\wedge}$ are regained through regressing yt* on the intercept and time trend as:

$$y_t^* = y_t - \sum_{j=1}^{p} \theta^{\wedge}{}_j y_{t-j}$$

LM illustrates that the asymptotic distribution of $s^{\wedge}{}_\varphi$ is the same as the resultant distribution derived through KPSS. Therefore, the same critical values are applicable for testing the null of stationarity.

ARDL Model to Cointegration

The ARDL model is employed in this study owing to the following advantages over the cointegration models. Firstly, the ARDL model of cointegration is considered superior irrespective of the sample size, that is, whether the sample is small or finite and the number of observations in it remain between 30 and 80. Secondly,

the most important point regarding cointegration is that it is more useful for mixed order I(0) and I(1) of the stationarity of the variables. Thirdly, for both endogeniety and serial correlation problems, ARDL is correct with the appropriate lags (Pesaran et al., 2001). Fourthly, the ARDL model can evaluate the short-run and long-run cointegration relationships simultaneously and offers unbiased estimates (Pesaran et al., 2001).

The following equation was developed to estimate the long-run association and its coefficients:

$$\Delta Y_t = \delta_0 + \delta_1 Y_{t-1} + \delta_2 Dec_{it-1} + \delta_3 PF_{t-1} + \delta_4 X_{it-1} + \sum_{p=1}^{k} \delta_p \Delta Y_{it-p} + \sum_{q=0}^{k} \varphi_q \Delta PF_{t-q} + \sum_{j=0}^{k} \vartheta_j \Delta X_{it-j} + \varepsilon_{it} \qquad (4)$$

where symbol Δ exhibits the variable change.

Engle and Granger (1987) conducted Vector Auto Regression (VAR) for estimations and found that these estimates were not stable when the data set was converted into the first difference. Error Correction Model (ECM) was formulated through the ARDL approach to detect the long-run cointegration amid variables in order to estimate the best fitted model. Subsequently, the first lagged period error term was assimilated in the ARDL model to get significant and efficient estimates. The improved VECM is presented as follows:

$$\Delta Y_t = a_0 + \sum_{k=1}^{p} \beta_k \Delta Y_{it-k} + \sum_{j=0}^{p} \gamma_j \Delta PF_{t-j} + \sum_{q=0}^{p} \delta_q \Delta X_{it-q} + \theta ECT_{t-1} + \varepsilon_{it} \qquad (5)$$

Construction and Description of Variables

Decentralization Measures

Tax Decentralization. It was measured by the portion of the provincial government's tax pool in the tax revenues of the federal government. The formula for tax decentralization is stated as follows:

$$TD = \frac{Provincial\ Tax\ Revenue}{Federal\ Tax\ Revenue + Provincial\ Tax\ Revenue}$$

The data was obtained from the numerous issues of the Pakistan Statistical Year Book (e.g., Pakistan Statistical year book 2002. 2010, 2018). The graph shows that tax decentralization has been an

increasing trend since 1990. It increased from 23% to 39% between 1990 and 2018.

Figure 1

Tax Decentralization in Pakistan
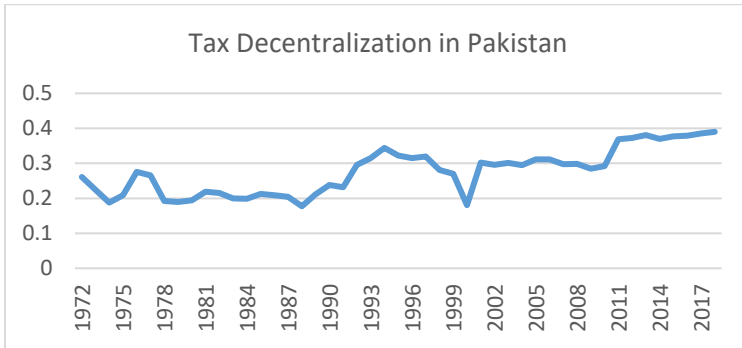
Administrative Decentralization. Administrative decentralization can be measured by examining the control applied over the local revenue. The ratio of local taxes from the total revenue is an indicator of the level of subnational control over the resources (Schneider, 2003). It is calculated as follows:

$$AD = \frac{Provincial\ Own\ Source\ of\ Tax\ Revenue}{Total\ Provincial\ Revenue}$$

Figure 2

Administrative Decentralization in Pakistan
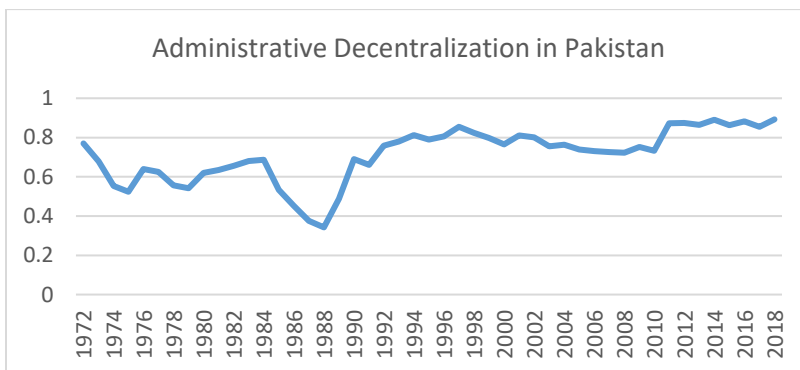
Data was collected from the various issues of the Pakistan Statistical Year Book (e.g., 50 years of Pakistan Vol III and IV, Statistical Year Book 2018). The graph shows that administrative

decentralization increased from 0.68 to 0.89 between 1990 and 2018.

Political Decentralization. Schneider ([2003](#)) defines the mechanism of political system in a country that is constituted through the national and local elections by assigning the values (0-6) for an index. The value 1 denotes the oath taking of the members of the national assembly as well as members of local body in each province (Punjab, Sindh, KPK and Baluchistan). Correspondingly, the value 1/4 presents the oath taking of the members of provincial assembly. It also takes the value of 1 if the local body members take oath in each province. If all the members of national, provincial and local bodies take oath in a year, it will be presented with maximum value 6. Whereas, the minimum value 0 is used in the absence of oath taking in setup of national / provincial and local body members.

Political Freedom

The political freedom index is used as a proxy for the institutions. It is constructed by averaging civil liberty and political rights. The index value varies from 0 to 7, where 7 indicates 'no freedom' and 0 stands for a 'fully free' country. The relevant data for Pakistan from 1972 to 2018 has an average of 4.7. It shows the relative weakness of the governing institutions of Pakistan. Previous studies have examined economic growth as influential factors of civil liberty, political rights (Aixalá & Fabro, [2009](#)). The data source is freedom house.

Control Variables

Total labor force is used as the proxy of the human capital. Time series data for the human capital was collected from the various issues of the Economic Survey of Pakistan (Economic survey of Pakistan, 2000, 2010, 2018). Time series data was taken for the time period 1972-2018. Foreign aid is considered to be a growth promoting factor for under developed economies conditioned with sound trade, as well as sound monetary and fiscal policies (Burnside & Dollar, [2000](#)). The proxy for foreign aid is the official aid received and net official development assistance. World Development Indicators (WDIs) were the source of the data. Physical capital is an important factor in economic growth. A positive association was

established between the physical capital and the performance of the economy (Jan et al., 2012). The proxy for physical capital is used as the log of gross fixed capital formation. The data for physical capital was taken from the WDIs. The production function contains both the human and the physical capital. The control variable of this study is population growth rate as it cannot be ignored in growth theory (Sala-i-Martin, 1997). The study has used data taken from the WDIs (Online data base).

Empirical Results and Discussion

The variable "Log of GDP Per Capita (LGDPPC)" was used as dependent variable in this study. The results of Table 1 shows that the average value of LGDPPC is 2.68. The variables in log forms have been used except the decentralization ratios and the population growth rate.

Table 1

Descriptive Statistics

Variables	Obs.	Max	Min	Mean	Median	Std. Dev.
GDP Per Capita	47	3.1709	1.9928	2.6795	2.6512	0.2982
Tax Decentralization	47	0.3811	0.1772	0.2706	0.2844	0.0596
Administrative Decentralization	47	0.8924	0.3422	0.7110	0.0777	0.1370
Political Decentralization	47	1.0000	0.0000	0.4728	0.3333	0.3189
Political Freedom	47	6.0000	3.0000	4.7948	4.5000	0.8249
Labor Force	47	1.7806	1.3332	1.5603	1.5337	0.1347
Gross Fixed Capital Formation	47	10.5128	9.3617	9.9865	9.9711	0.3226
Foreign Aid	47	9.5577	8.7894	9.0974	9.0302	0.2142
Population Growth Rate	47	3.4169	1.6851	2.6028	2.6454	0.6021

The descriptive statistical summary of the selected variables is given in the above table-1. The mean values for the variables tax decentralization (TD), administrative decentralization (AD) and political decentralization (PD) are 0.27, 0.711 and 0.7286, respectively. The mean value for the variable labor force (LF) is 1.560375 with the standard deviation of 0.1347, while the mean value for the variable average capital (GFCF) is 9.986509 with the standard deviation of 0.322. According to the statistical analysis, the mean values for the variables foreign aid (AID) and population growth rate (PGR) in Pakistan are 9.097, and 2.60, respectively.

Table 2

Unit Root Test Results

Variables	KPSS		Ng-Perron	
	LM-Stat At Level	LM-Stat At 1st Difference	MZa At Level	MZa At 1st Difference
LGDPPC	0.7921	0.0764*	1.6475	-7.7201***
TD	0.1492*	0.0928	-8.5213**	-20.1555*
AD	0.7997	0.5000**	-3.1553	-19.3236*
PD	0.0885*	0.1141*	-10.6803**	-20.5000*
PF	0.0829*	0.0839	-7.0112***	-20.4153*
LF	0.8239	0.1019*	-0.1629	-20.4145*
LGFCF	0.8019	0.1320*	1.2226	-7.9400***
LAID	0.7535	0.2451*	0.7354	-39.5224*
PGR	0.6705**	0.2337*	-463.131*	-6.4248***

(*, **, *** show stationarity at 1%, 5% and 10% respectively)

The outcomes of both unit root tests, that is, KPSS and Ng-Perron are elaborated in the above Table 2. The dependent variable, that is, the GDP per capita remains stationary at the first difference for both KPSS and Ng-Perron tests. The explanatory variables, that is, TD, PD, PF, and PGR remain stationary at level, while other variables including AD, LF, GFCF and AID remain stationary at the first difference.

Table 3

Results of Bounds Test for Cointegration

Equation	F-Statistics	Critical Value Lower Bound	Critical Value Upper Bound	Conclusion
LGDPPC=TD,PF,LGFCF, LF,LAID,PD,PGR	5.9644 (95%)	2.32	3.5	Co-integration
LGDPPC=AD,PF,LGFCF, LF,LAID,PD,PGR	5.2923 (95%)	2.32	3.5	Co-integration
LGDPPC=PD,PF,LGFCF, LF,LAID,PGR	5.0584 (95%)	2.32	3.5	Co-integration

The results of the bound test for cointegration are presented below in Table 3. The findings show the F-statistics for three models which are above the upper bound critical value, so cointegration exists.

The best performing ARDL models were selected on the bases of the resulting ARDL-ECM parameters. Akaike information and Schwarz information criteria were used in the current study. The optimal numbers of lags for each of the variables of the models 1 -3 are ARDL (1, 0, 2, 1, 2, 2, 0, 0), ARDL (1, 1, 1, 1, 1, 2, 0, 1) and ARDL (1, 0, 2, 0, 2, 2, 2), respectively. The empirical result showed that linear combinations exist in the concerned variables in the long-run.

The results of tax decentralization are reported in Table 4 below. For Model 1, the empirical findings revealed that the coefficient of tax decentralization is positive and significant at 5% level of significance. Hence, it contributes to the economic growth of Pakistan positively and significantly. The outcomes are consistent with the basic theory of decentralization. The greater is the tax decentralization, the higher is the economic growth. The provinces receive more autonomy in the allocation of resources with a greater degree of tax decentralization. Again, the outcomes are consistent with the previous literature which reflects that revenue

decentralization promotes economic growth in Pakistan (Iqbal et al., 2012). Political freedom has positive and significant impact on economic growth. The interpretation of the negative impact of political freedom makes it difficult for the provincial governments to internalize the economies of scale and other externalities in the provision of public goods and services. It implies that the elected governments of provinces focus only on the areas in their respective jurisdictions as they are too accountable to the local citizens. Such conduct hinders cooperation and policy coordination between the federal and provincial governments. Similar results regarding the negative impact of excessive political freedom were yielded by the previous studies (Iimi, 2005).

Table 4

Long-run Estimates (Dependent Variable=LGDPPC)

Variables	Model-1 (1, 0, 2, 1, 2, 2, 0, 0)	Model-2 (1, 1, 1, 1, 1, 2, 0, 1)	Model-3 (1, 0, 2, 0, 2, 2, 2)
TD	0.2931 [0.0232]**	_	_
AD	_	-0.0836 [.0999]***	_
PD	-0.0008 [0.6860]	-0.0061 [0.0121]**	0.0064 [0.0074]*
PF	0.0143 [0.0346]**	0.0171 [0.0045]*	0.0281 [0.0001]*
LGFCF	0.4971 [0.0000]*	0.3215 [0.0010]*	0.3522 [.0000]*
LF	1.1989 [0.0004]*	1.0716 [0.0003]*	0.8226 [0.0008]*
LAID	0.3309 [0.0000]*	0.3321 [0.0015]*	0.3652 [0.0000]*
PGR	0.3434 [0.0000]*	0.1731 [0.0009]*	0.1004 [0.0004]*
Constant	-4.2685 [0.0000]*	-5.3305 [0.0000]*	-5.4618 [0.0000]*

(*, **, *** show stationarity at 1%, 5% and 10% respectively)

Many control variables were incorporated in the estimated model to determine the growth impact of tax decentralization in Pakistan. The coefficient of the physical capital is positive and significant. It indicates that the higher is the investment in the real stock, the greater is the GDP per capita. Human capital contributes to economic growth positively and significantly. The positive and significant coefficient of foreign aid shows that it promotes economic growth. The outcomes are consistent with the findings of the prior empirical studies that postulated foreign aid as growth promoting for the low-income countries (Qayyum & Haider, 2012). Political decentralization has a negative but insignificant effect on the economic growth of Pakistan. Population growth rate positively and significantly contributes to economic growth at 1% level. The outcomes are consistent with the prior empirical findings postulating that the population growth rate positively enhances the economic growth of Pakistan (Ali et al., 2013).

The results of administrative decentralization in Model 2 depicted in Table 4 show that the coefficient of administrative decentralization is negative but significant. The negative sign shows that it is growth retarding, supporting the interpretation that decentralization appears to have an unfavorable impact on the performance of the economy. The measure of administrative decentralization depicts the autonomy of the provinces for generating their own sources of tax revenue and it may foster corruption. The reason behind the negative impact may be that the provincial governments are technically deprived as compared to the central government in the allocation of resources and are unable to manage efficient public service delivery. The outcomes are consistent with prior studies that administrative decentralization decreases economic growth (e.g., Rodríguez-Pose & Ezcurra, 2010). Inverse outcomes of political freedom imply that the elected governments of the provinces focus only on their jurisdictions as they are too accountable to the local citizens. Such conduct hinders cooperation and policy coordination between the federal and provincial governments.

For Model 2, the coefficient of physical capital is positive and significant. It indicates that the higher is the investment in the real stock, the greater is the GDP per capita. Human capital contributes

to economic growth positively and significantly. The positive and significant coefficient of foreign aid shows that it promotes economic growth. The outcomes confirm the empirical results of the prior studies that greater political decentralization may boost corruption in weak institutions (e.g., Rodríguez-Pose & Ezcurra, 2010). Moreover, population growth rate positively and significantly contributes to economic growth at 1% level.

The results of the Model 3 indicate that the negative coefficient of political decentralization has a growth retarding impact. The results are statistically significant at 1% level. The outcomes confirm the empirical results of prior studies (e.g., Rodriguez-Pose & Ezcurra, 2010). The significant positive aspect of political freedom shows more economic growth with less freedom. The interpretation of the negative effect of political freedom makes it difficult for the provincial governments to internalize the economies of scale and other externalities in the provision of the public goods and services. It implies that the elected governments of the provinces focus only on their jurisdictions as they are too accountable to local citizens. Such conduct hinders cooperation and policy coordination between the federal and provincial governments.

For Model 3, the coefficient of the physical capital is positive and significant. It indicates that the higher is the investment in the real stock, the greater is the GDP per capita. Human capital contributes to economic growth positively and significantly. The positive and significant coefficient of foreign aid shows that it promotes economic growth. Moreover, population growth rate positively and significantly contributes to economic growth at 1% level.

Short-run outcomes are elaborated in the Table 5. The tax decentralization, administrative decentralization and political decentralization all are significant. However, there is no significant impact on economic growth of political institutions. In Model 1, political decentralization has an insignificant impact. The controlled variables i.e. population growth rate, physical capital, and foreign aid have a significant impact on economic growth. With the introduction of first period lagged ECM, a stable and long-run

equilibrium can be obtained through the speed of adjustment. With the significant negative coefficient of ECM (-1), the convergence towards the long-run equilibrium is determined (Bannerjee et al., 1998). Hence, convergence hypothesis is confirmed as the coefficient of ECM (-1) is negative and significant. The speed of adjustment to achieve the long-run equilibrium is almost 60 percent, 64 percent and again 64 percent for the models 1, 2 and 3, respectively.

Table 5

Short-run Estimates (Dependent variable=ΔLGDPPC)

Variables	Model-1	Model-2	Model-3
ΔTD	0.1735 [0.0397]**	_	_
ΔAD	_	0.1154 [0.0066]*	_
ΔPD	0.0005 [0.6812]	0.0039 [0.0073]*	0.0041 [0.0116]**
ΔPF	0.0014 [0.7854]	0.0018 [0.6918]	0.5250 [0.2808]
ΔLGFCF	0.7448 [0.0000]*	0.5119 [0.0000]*	0.6010 [0.0000]*
ΔLF	0.1261 [0.7238]	0.2109 [0.5637]	0.5250 [0.0093]*
ΔLAID	0.0933 [0.0001]*	0.0826 [0.0044]*	0.0901 [0.0004]*
ΔPGR	0.2033 [0.0011]*	0.3487 [0.0001]	0.1283 [0.2255]
ECM$_{t-1}$	0.5919 [0.0000]*	0.6417 [0.0001]*	0.6382 [0.0000]*

(*, ** show stationarity at 1% and 5%)

The outcomes of different diagnostic tests are elaborated in the Table 6. These include the Jarque-Bera test, which confirms the normality of the data for all models. Similarly, there is no multicollinearity and hetroskedasticity as manifested by the LM test and Breusch-Pagan-Godfrey test respectively and the models are

correctly specified. CUSUM and CUSUMSQ confirm the stability of all three models at 5% level of significance.

Table 6

Diagnostic Checking for ARDL

	Model 1	Model 2	Model 3
Jarque-Bera	0.9012 [0.6372]	1.3108 [0.5192]	0.2481 [0.8833]
LM Test	1.2984 [0.2895]	1.9994 [0.1550]	2.4393 [0.1127]
Breusch-Pagan-Godfrey Heteroskedasticity	0.4409 [0.9397]	0.4249 [0.9474]	0.7153 [0.7459]
Ramsey Reset Test	2.1663 [0.1566]	.974198 [.3416]	0.0675 [0.9468]
Stability Test (5%)	CUSUM= Stable CUSUMSQ = Stable	CUSUM= Stable CUSUMSQ = Stable	CUSUM= Stable CUSUMSQ= Stable

Conclusion

Decentralization is the policy variable used to enhance the allocative efficiency through public spending / tax priorities, subject to the local demand. The current study evaluates the impact of the various dimensions of decentralization on the economic growth of Pakistan for the years 1972-2018. The outcomes of the study showed that tax decentralization positively contributes to the economic growth of Pakistan. The empirical findings are consistent with the basic theory of decentralization. The greater is the tax decentralization, the higher is the economic growth. The provinces get more autonomy in the allocation of resources with a greater degree of tax decentralization.

The outcomes showed that administrative decentralization is negative but significant. The negative sign shows that it is growth retarding, which supports the interpretation that decentralization appears to have an unfavorable impact on the performance of the

economy. The measure of administrative decentralization depicts the autonomy of the provinces in generating their own sources of tax revenues and it may foster corruption. The reason behind the negative impact may be that the provincial governments are technically deprived as compared to the central government in the allocation of resources and are unable to manage efficient public service delivery. Political decentralization negatively affects economic growth and statistically, it is significant.

The significant and positive political freedom shows more economic growth with less freedom. The interpretation of the negative effect of political freedom makes it difficult for the provincial governments to internalize the economies of scale and other externalities in the provision of public goods and services. It implies that the elected governments of the provinces focus only on their jurisdictions as they are too accountable to the local citizens. Such conduct hinders cooperation and policy coordination between the federal and provincial governments.

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