

## FISCAL DECENTRALISATION AND ECONOMIC GROWTH

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### Abstract

This study discusses the impact of fiscal decentralisation on economic growth to have an in-depth analysis of different policies that are in practice for decentralisation. This study makes it obvious that mere decentralisation is not enough; the equally important matter is how to decentralise? In this context, the empirical evidence suggests that fiscal decentralisation can impact economic growth in the long-run only when provinces are allowed and incentivised for higher own source revenue generation. On the other hand, higher federal transfer (another important source of fiscal decentralisation) only had short-run implications for the economic growth in the case of Pakistan. This finding should attract policymakers' attention while assessing the NFC awards in Pakistan.

*Keywords:* Fiscal Decentralisation, NFC Award, Pakistan, General-to-Specific (Gets) Approach, ADL Technique.

*JEL Classification:* C22, H11, H77, O40.

### I. Introduction

At the doorstep of the new century, comparison between localisation and globalisation by the World Bank<sup>1</sup> highlights the decentralisation's potential for development. Oates (1999) assessed in order to improve the performance of the public sector, the industrialised as well as the developing countries, are focusing on devolution of powers to local levels. Theory of fiscal federalism is important because it identifies the basic framework to deal with the issue of aligning responsibilities alongside the fiscal instruments. It helps the best-suited tiers of government to carry out the assigned functions smoothly. Therefore, fiscal federalism determines the administrative and financial boundaries of different tiers of the government through the distribution of responsibilities as well as resources. In this process, fiscal decentralisation emerged as an im-

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<sup>1</sup> 'Entering the 21<sup>st</sup> Century', the World Development Report, 1999-2000.

portant part of fiscal federalism that facilitates the mechanism of devolving fiscal resources to match the responsibilities at lower levels of government. The resource distribution mechanism is ideally designed in a manner such as the lower levels of government get entrusted with adequate finances and suitable taxation powers. Hence, fiscal decentralisation is meant to internalise the efficiency gains from justified resource allocation.

The importance of the discussion is evident from the literature associated with fiscal decentralisation that goes back as far as Tiebout (1956) and Musgrave (1959). Musgrave (1959) identified macroeconomic stability, judicious income distribution and amicable resource distribution as the three major functions of government. In this connection, Oates (1972) emphasised that in order to ensure efficient resource distribution among jurisdictions, 'public service should be provided by the jurisdiction having control over the minimum geographic area that would internalize benefits and costs of such provision'. This paves the road to decentralisation to achieve better resource management through competition among the local governments [Ebel and Yilmaz (2002)]. This is now widely accepted that a well-chosen blend of decision making at the local and central levels, is the key to effective governance [Inman and Rubinfeld (1997)].

Generally, fiscal imbalances do exist among different tiers of government because of the income and expenditures disparity at any particular level of government. Fiscal imbalances arise across the provinces due to differences not only in their fiscal capacity but also due to the cost of disabilities in the quest for providing comparable services to its people [Ma (1997)]. In this context, Shah, et al. (2004) pointed out that in developing countries there are large dominant central governments, that are mainly relying on indirect taxes while local governments have limited own source revenues; this ultimately limits the sub-national autonomy. In this situation, fiscal decentralisation provides the required mechanism of local revenues and fiscal transfers from the centre that can solve the issue. Thus, fiscal transfers help to achieve equity and efficiency as well as ensure stability and predictability in provincial budgets. Judicious resource distribution within the federation enhances the efficiency as well as the effectiveness of different tiers of government. It encourages the provinces to streamline their capabilities and contribute towards the development of the country by surfacing a better voice, encouraging innovation, experimentation of policies as well as ensuring better accountability.

This study concerns the structure and effects of fiscal decentralisation in Pakistan, keeping the basic theory of fiscal federalism in mind. Pakistan was selected for the analysis because of its unmatched resource distribution mechanism, i.e. based on the single criterion (i.e., population<sup>2</sup>) for horizontal fiscal resource distribution. There is a need to assess whether such simplicity<sup>3</sup> of resource, distribution mechanism contains the required incentives for the federating units to grow? Therefore, it would be inter-

<sup>2</sup> Till 2009, only population was used as a single criterion for horizontal resource distribution in Pakistan.

<sup>3</sup> That ensures predictability and provinces can have better idea about the future stream of resources, that presumably results in stability of the policies at regional level.

esting to know how this special fiscal resource distribution stance of Pakistan has contributed to its economic performance over time. In the given context, this paper would isolate the effects of a single resource distribution stance. In contrast, most of the countries are concerned about additional criteria to ensure amicable and effective resource distribution.

This research study focuses to find out the economic effects of Pakistan's fiscal resource distribution mechanism; that was exercised during the period 1974-2009. This study uses different fiscal decentralisation measures to identify the financial autonomy as well as fiscal dependence of the provinces and resultantly gauge their long-run impact on economic growth. The analysis would eventually lead us to decide about the economic outcome of fiscal decentralisation using a uni-criterion formula for resource distribution, which will help in finding the way forward.

This study comprises as follows. After introducing the topic, the study presents the literature concerning fiscal decentralisation and economic growth in Section II. The section also provides discussion relating fiscal decentralisation mechanism in Pakistan and the proxies used in this study. Section III encompasses the data and methodology part. The estimation results are presented in Section IV, while Section V concludes the study.

## **II. Literature Review and Background**

Before going into details, it is important to have a look at the discussions presented in the literature. In this respect, the theoretical and empirical background, the existing proxies for fiscal decentralisation, the decentralisation mechanism in Pakistan and lastly, the measures adapted to proxy fiscal decentralisation in this study are elaborated in the section.

### ***1. Fiscal Decentralisation and Economic Growth in Literature***

The fundamental presumption in literature favouring fiscal decentralisation exhibits that decentralised system is conducive to influence outcomes in accordance with public desires and increases political participation [Blais, et al. (2011)]. When decentralisation has the features of local decision making, it consequently results in a productive and growing economy [Oates (1999)]. The main idea is that local people better undertake policies related to local public service provision. Being located near to the people, local representatives have better access to information regarding local preferences and local needs. Hence, for services like basic infrastructure, education and health (being sensitive to local and regional conditions), indigenous decisions are relatively more effective; therefore, it helps in enhancing economic growth, as compared to policies designed by central authorities [Oates (1993)].

Empirical studies have found statistically significant positive relationship among localisation and national economic performance. Decentralisation induces inter-jurisdictional competition is expected to act as discipline force that restraint the tendencies toward excessive spending and unproductive use of resources in the public sector in the long-run. Inter-jurisdictional competition among local governments results in higher efforts to raise more revenues and consequently spend higher amounts on public services under decentralisation [Hatfield and Kosec (2013)]. They said study argues that as local governments have to compete for investment and well-off residents; decentralisation increases productivity and hence, enhances economic progress. Furthermore, a number of papers have provided detailed analysis concerning fiscal decentralisation and economic growth [including Baskaran, et al. (2016), Feld and Schnellenbach (2011) and Ivanyna and Shah (2014)], highlighting important linkages, as well as the possible disconnect among the two phenomena.

Experience suggests that a weakly designed decentralised system poses a serious threat from the financial point of view. If a system is so designed which allow provinces to externalise their costs to other jurisdictions, without putting in their outstanding effort, it will result in negative effects [Rodden and Eskeland (2003), Hagen, et al. (2000)]. Similarly, situations can arise where the lower levels charges taxes even higher than the centralized level and Koethenbuerger and Lockwood (2010) presented situations where fiscal decentralisation can also result in lower economic growth. Rodden (2002) theoretically proved that though domestic revenue-raising powers restrict the size of the government; intergovernmental transfers, on the other hand, result in higher spending behaviour on the part of SNGs. Similarly, the inferior administrative capacity of local authorities, corruption and leviathan government is also counted as the potential threats linked with fiscal decentralisation [Weingast (2014), Ivanyna and Shah (2014), Ivanyna and Shah (2011), Vo (2009)].

In brief, we need to keep in mind both the first generation as well as the second-generation theories of fiscal federalism while analysing the resource appropriation among tier of government and its impact on economic growth.

## ***2. Fiscal Decentralisation Measures for Pakistan***

Decentralisation is multifaceted, covering different issues ranging from the revenue raising competency to the administrative responsibilities as well as covers the spending capabilities of the sub-national governments. In this connection, both the revenue and expenditure approaches were thoroughly considered to measure fiscal decentralisation for this study. Later with the approach, the expenditure incurred at the sub-national level of government is generally used for measuring the degree of fiscal decentralisation. However, with the available national data, it is difficult to exclusively discriminate between the federal and provincial expenditures in Pakistan. The development spending, indicated in the provincial expenditures, remained partly

funded through foreign project assistance or was financed by the federal government. However, no clear demarcation is available to distinguish federal and provincial spending for the whole period of analysis. Therefore, in the case of Pakistan, the right degree of fiscal decentralisation is hard to be captured using the expenditure approach.

Contrary to it, the revenue approach (i.e., revenue raised by different levels of governments) fits appropriately in the context of this study. Revenue approach to measure fiscal decentralisation provides the required diversity for analysis. This approach using, it is possible to identify the effects of the 'own source resource generation' of the provinces. At the same time, it enables us to capture the provinces' dependence on transfers from the federal government in the case of Pakistan. Revenue approach helps in identifying the provincial resource inflows and their revenue raising capacities that resulted from various National Finance Commission (NFC) awards overtime. In this study, the revenue approach was used to proxy fiscal decentralisation. A rise in the provincial revenues<sup>4</sup> would suggest the higher degree of fiscal decentralisation, although the alternative sources of provincial revenue are supposed to have a different implication for economic performance. Important to note here is that in Pakistan, provinces were never able to finance their expenditures; that is why federal transfers always constituted a lion share of provincial revenues [Khattak, et al. (2010)].

In financial terms, total provincial revenues consist of domestic own tax revenues, non-tax revenues and share in federal taxes (i.e., the federal transfers to provinces). Provincial taxes represent resources which were collected and retained by the provinces. These include minor taxes that are the provincial subject and provinces were allowed to fix rates and bases for these taxes. On the contrary, federal transfers to sub-national governments were decided out of the total divisible pool at the centre and these present provincial shares in the federally collected taxes [see Ahmed, et al. (2007)] for details concerning resource distribution mechanism (NFC awards) in Pakistan]. Thus, there appear to be two important aspects of provincial revenues in Pakistan; one is provincial domestic revenue potential (including tax as well as non-tax revenues, that were considered net of intergovernmental transfers) while the other is the federal transfers. This study separates the effects of these important aspects of provincial revenue, which were assessed separately in the regression to analyse their respective impact on the economic growth of Pakistan.

### ***3. Proxies for Fiscal Decentralisation***

The objective of the study, four measures was used to precisely evaluate different dimensions of fiscal decentralisation (see Appendix A for a graphical representation) and to assess their implications on economic growth in Pakistan. These measures of fiscal decentralisation are explained below:

<sup>4</sup> Own sources or federal transfers.

a) *Provincial Tax Autonomy*: is defined as the provincial own tax revenues.<sup>5</sup> This indicator measures the revenue raising authority of SNG and it represents revenues over which provinces have full discretion. If SNGs have higher own source revenues, it shows higher fiscal autonomy and would indicate a higher level of fiscal decentralisation. To capture the degree of fiscal decentralisation overtime and to make provincial tax autonomy measure economically meaningful, the share of provincial tax revenues is expressed as a ratio to total government revenues.

b) *Provincial Local Revenues*: is an additional measure of local fiscal autonomy and it takes into account the revenues that are domestically generated within the provincial boundaries. The domestic tax, as well as the non-tax revenues, marks the local, provincial revenues. The non-tax proceeds contain revenues from fines, user charges, interest, dividends and profits from autonomous bodies. In addition, the international assistance and grants received by provinces also rest in the non-tax revenues. This measure presents the provinces' revenue generation capacity and is used here as an indicator for local fiscal autonomy in decision making. To be used as a measure for fiscal decentralisation, provincial, local revenues are used as a ratio to total government revenues.

c) *Federal Transfers*: In developing countries, federal transfers to provinces play an important role in shaping local budgets. Although, federal transfers to provinces increase funds availability to provinces; however, at the same time, it indicates SNG's fiscal dependency on the centre. Intergovernmental transfers depict the vertical fiscal imbalance in the country. If the share of federal transfers is higher in the provincial revenues, higher would be the chances for the federal government to influence local decision making, which will be a deviation from the basic theory of fiscal decentralisation. Nevertheless, it also carries the benefits as described under partial fiscal decentralisation analysis by Brueckner (2009). Hence, thoroughly assessing the impact of federal fiscal transfers on the overall economic growth of the country is of high importance. Federal transfers would thus be analysed as a third measure of fiscal decentralisation. This measure is expressed in the relative form to total government revenues.

d) *Total Provincial Revenue*: Total provincial revenue represents the total budgetary strength of the SNG. This measure takes into account the total availability of financial resources at the provincial level. Total provincial revenues hence are the sum of the second and third measures explained above and consist of the local tax and non-tax proceeds as well as revenues from federal tax sharing (i.e., federal transfers). Thus, it indicates the total availability of funds to SNGs which provinces can use for the provision of local public goods within their jurisdictions. Importantly, although the expenditure approach was not used, this measure would provide a mirror image for it (as in the presence of federal transfers and being barred to raise international loans

<sup>5</sup> A tax at provincial level was considered as 'own tax' revenue source when the provincial government has the authority to determine its rate, base or both.

(during the period under analysis), provinces never generated substantive fiscal deficits or surplus in Pakistan). As local representatives have better information about local needs and preferences and are interested in their re-election; therefore, this measure would capture the effects of spending ability of the local representatives on economic efficiency. Total provincial revenues indicate the SNG's share in total government revenues.

This scheme of measures for fiscal decentralisation would enable us to deduce relevant information and quantify the impact of fiscal decentralisation on economic growth.

### **III. Data and Methodology**

This section contains the discussion regarding the basic economic model that relates fiscal decentralisation to economic growth. Besides, the variables used data properties and the estimation techniques for empirical analysis are also discussed below.

#### ***1. Theoretical Link between Fiscal Decentralisation and Economic Growth***

The theoretical model developed by Davoodi and Zou (1998) provided a theoretical link between fiscal decentralisation and economic growth. The given study extended the Barro (1990) endogenous growth model that presents the production as a function of capital spending and public spending. Davoodi and Zou (1998) advanced their argument by questioning the impact of public spending when carried out by different tiers of government. They argued that it is important to find out which tier is more efficient in public spending.

Davoodi and Zou (1998) argued that spending by different tiers of government would have different effects on the overall economic growth. Their model explains that appropriation of public spending<sup>6</sup> among given tiers can result in better economic growth; provided that prevailing spending pattern is different from the growth maximising spending ratios. Davoodi and Zou (1998), along with Zhang and Zou (1998) and Xie, et al. (1999), provided a theoretical base for the argument that channelizes the effects of fiscal decentralisation on the economic growth. Once the channel from fiscal decentralisation to economic growth is explained, researchers, later on, tried different ways to accurately quantify fiscal decentralisation. This led to the use of different approaches for the quantification of fiscal decentralisation, including the expenditure approach, revenue approach, taxation ability at SNG and the use of dichotomous variables. This study, as explained earlier, uses the revenue approach to measure fiscal decentralisation and following the stated model above, the desired regression equation can be written as Equation 1:

<sup>6</sup> Without even changing the prevailing budget share in GDP.

$$\Delta \text{RGDP}_t = \alpha_0 + \alpha_1 \text{FD}_{it} + \alpha_2 D_t + \alpha_3 \text{Control}_t + \varepsilon_t \quad (1)$$

where  $\Delta \text{RGDP}_t$  indicates real gross domestic product growth rate.  $\text{FD}_t$  presents fiscal decentralisation measures for Pakistan. As mentioned above, four different proxies are employed, in isolation, to correspond to different proxies of fiscal decentralisation, as indicated by 'i'. Here 't' refers to time. The years hit by political instability are captured with the help of a dummy variable  $D_t$ . The inclusion of dummy for politically volatile years is expected to contain the effects that might have affected the economic output of Pakistan. Furthermore,  $\text{Control}_t$  variables<sup>7</sup> like an investment, government expenditures, trade openness, inflation (representing macroeconomic situation), labour force and tax to GDP ratio were considered during the estimation to get reliable results (Table 1). Lastly,  $\varepsilon_t$  represents the error term.

**TABLE 1**  
Variables' Names, Definition and Data Sources

Variable	Name	Definition	Data Sources
Economic Growth	$\Delta \text{rgdp}$	Real GDP growth (at constant prices)	WDI, World Bank
Investment	inv	Investment to GDP ratio	SBP, 2005 G.O.P. 2009, 2010
Government expenditures	ge	Government current expenditures to GDP ratio	WDI
Trade openness	open	(Exports + Imports) /GDP	-do-
Macroeconomic stability	inf	Inflation	-do-
Labour force	lf	Labour force participation rate	-do-
Government revenues	taxtgdpr	Tax to GDP ratio	-do-
Provincial tax revenue	fdtax	Provincial tax revenue ratio*	SBP, 2005 G.O.P. Various issues
Provincial local revenue	fdloc	Provincial tax+non-tax revenue ratio*	-do-
Federal transfers	fdtrans	Federal transfers to provinces ratio*	-do-
Total provincial revenue	fdtpr	Total provincial revenue ratio*	-do-

Source: Author's estimation.

Note: \* Fiscal decentralisation measures were expressed as a ratio to total government revenues.

<sup>7</sup> Mainly following Levine and Renelt (1992).



## 2. Data

This study aims to investigate the impact of fiscal decentralisation on economic growth in Pakistan. In order to achieve this objective, this study utilized time series data consisting of 36 data points covering 1974-2009. The major reasons for the selection of the said time period included; the promulgation of the new constitution of Pakistan in 1973; the one that defines the prevailing resource distribution mechanism in Pakistan. In addition, during the period 1955-1970, the country was declared as one unit, and there were no provincial boundaries. Therefore, this study is constrained to start with the year 1974. On the other hand, the analysis was restricted to the year 2009 in order to avoid the worse hit years of terrorism for Pakistan. Furthermore, drastic changes occurred in resource distribution due to the 18<sup>th</sup> constitutional amendment and NFC award in the year 2010. In the said NFC award, the provincial share in resource pool was increased from 47.5 per cent to 57.5 per cent while the resource distribution criteria were also diversified-representing an entirely different regime. Hence, the rest of the years were not enough to exhibit the long-run contribution of such fundamental changes.

### a) *Augmented Dickey-Fuller Test*

Generally, the time series data is prone to have unit root issues due to time variation in mean, variance and auto-covariance. Without knowing the stationarity issues, treatment of data can potentially result in spurious results because if data contains time trends, the estimated regression coefficient will not present the actual behaviour of the variable alone and these are likely to carry effects of the time trend. Therefore, before initialising the analysis of time series data, the investigation of the true order of integration for data series is of high importance. Hence, the Augmented Dickey-Fuller (ADF) test was applied to test the order of integration for the given series.<sup>8</sup>

The ADF test results are indicated in Table 3. The test produces interesting results for variables in levels. An important variable i.e. *inv* was stationary at levels with zero lag<sup>9</sup> (the higher lags were insignificant, and thus ADF test reduces to simple Dickey-Fuller test only). Results also indicate that one of the fiscal decentralisation variables, namely *fd<sub>pr</sub>*, was trend stationary with zero lag. Other variables were found to be non-stationary in levels. However, for the first difference form, the ADF test results suggest that all the data series are the first difference stationary. Whenever the higher lags were insignificant, results were estimated at zero lag. In Table 2, ADF test results suggest that data set contains a mix of variables that are trend stationary, level stationary as well as some are integrated of order one. Results were also confirmed by Phillips-Peron unit root test (but are not reported here to save space). Moreover, see Appendix B for summary statistics of the variables used in the regression analysis.

<sup>8</sup> Which were expressed in log levels while the abbreviations in small letter refers to the values in log.

<sup>9</sup> As a rule of thumb, two lags are used for annual data to ensure a serially uncorrelated error term.

**TABLE 2**  
Results for the ADF Test

Variables		$\tau$ - ADF with Con- stant	$\tau$ - ADF with Con- stant and Trend	Variables	$\tau$ - ADF with Con- stant
Real GDP	rgdp	-1.445	-----	$\Delta$ rgdp	-4.484**
Investment	inv	-3.723**	-----	$\Delta$ inv	-----
Government Expenditure	ge	-1.865(2)	-----	$\Delta$ ge	-2.988(1)
Openness	open	-2.492	-----	$\Delta$ open	-6.085**
Labour Force participation	lf	-1.216	-----	$\Delta$ lf	-5.357**
Inflation	inf	-2.764	-----	$\Delta$ inf	-5.527**
Federal transfers	fdtax	-2.850(2)	-----	$\Delta$ fdtax	-5.254**(1)
Provincial tax revenues	fdloc	-2.767(2)	-----	$\Delta$ fdloc	-3.946**(2)
Provincial local revenues	fdtrans	-0.9914	-----	$\Delta$ fdtrans	-4.745**
Total provincial revenues	fdtpr	-----	-2.183	$\Delta$ fdtpr	-6.077**
Critical values 1% =**,		-3.64	-4.26		-3.64
5%=*		-2.95	-3.55		-2.95

Source: Author's estimation.

Note: All variables are expressed in logs.

### 3. Methodology

Selection of appropriate estimation technique from the available alternative methods depends upon the data nature, data length and the relationship to be investigated. In the context of Pakistan, the resource distribution criteria were decided by National Finance Commission and according to the constitution; NFC awards were required to take place after five years, each. These awards reflect government decentralisation policy that remains implemented for a fairly long period and has long-run implications.

Similarly, fiscal resource distribution mechanism is favoured because it helps the local governments to channelize government spending towards such public goods that are in line with local needs and preferences. This setup is expected to eventually increase the productivity of the local population and would add to economic growth due to their increased satisfaction with local development. Fiscal decentralisation can

thus lead to improved efficiency for local enterprises and would result in higher and more sustainable economic growth [Qian and Roland (1996)]. Resultantly, due to the increased satisfaction level, such developments are supposed to convince people to contribute more towards the economy both in monetary terms<sup>10</sup> and in terms of increased productivity. Local representatives are also under closer scrutiny by their electorates and elections provide them greater incentives to work in public interests over the long-run [Lin and Liu (2000)]. It is generally assumed that fiscal decentralisation will have long term implications for economic growth [Oates (1993)]. Therefore, it needs to be analysed for the long-run impact on the economy.

It is important to consider that the given arrangement may also carry certain short-run consequences and the quantification of short-run effects would add to the analysis. Therefore, this study looks into the short-run impact in addition to the long-run significance of fiscal decentralisation in Pakistan. The study is aimed to measure the growth effects of the national government's position concerning fiscal decentralisation and identify areas of focus. To sum up, the 'Co-integration technique' and Error Correction Model (ECM) appears to be the appropriate econometric technique for estimating such kind of relationship.

In this study, as the available data has only 36 annual observations; therefore, such a technique needs to be used, which is consistent with small samples. Furthermore, as the dataset also contains variables that are I (1) and I (0), therefore, the Autoregressive Distributed Lag (ADL) model is the right choice. This paper, therefore, uses the ADL approach following the Kiviet and Phillips (1992). The ADL models encompass all the nested models, Kiviet and Phillips (1992) build their analysis on this property to derive the ECM set up and suggested co-integration test. The lagged level dependent variable is used as the error correction term in the test to correspond to the long-run relationship. The Kiviet and Phillips (1992) unrestricted dynamic model can be presented as Equation. (2):

$$\Delta y_t = \alpha' \Delta x_t + \beta y_{t-1} + \theta' x_{t-1} + \varepsilon_t \quad (2)$$

where  $y_t$  represents the dependent variable and  $x_t$  indicates the vector of independent variables. Here  $\alpha$  captures the short-run impact of changes in  $x$  on  $y$ . It is important to note that in ECM models, the long-run effects are not readily available. The long-run multiplier effects for the set of independent variables are calculated using the  $\theta'$  estimates<sup>11</sup>. Lastly, the error correction term is indicated by the coefficient of lagged dependent variable, i.e.  $\beta$  and shows that following a shock, how much of the disequilibrium is adjusted each period. Thus, equilibrium, in the long-run, is achieved at  $(\beta-1)$  rate, where  $(\beta \in 0, -2)$  where zero indicates the absence of a long-run relation-

<sup>10</sup>Such as reduction in tax evasion, which is crucial in developing countries.

<sup>11</sup>To calculate Long run elasticities the coefficient of lagged level explanatory variable is divided over the lagged level dependent variable i.e.  $k = \theta' / -\beta$ , in accordance with equation (2) specification.

ship. In contrast, any value above minus one ( $\beta > -1$ ) represents over shooting [Kiviet and Phillips (1992), Banerjee, et al. (1998)]. Hence, any value of  $\beta$  below '-1' ( $0 < \beta < -1$ ) specifies stability of the model indicating the long-run relationship.

Finally, to empirically estimate the stated relationship, the General-to-specific (Gets) approaches by Krolzig and Hendry (2001)<sup>12</sup>; Hendry and Krolzig (2003, 2005)<sup>13</sup> are adopted for the selection of the model. To elaborate, in Gets approach, the analysis starts with a plausible general model, followed by the removal of variables that do not attain statistical significance while keeping an eye over the diagnostic tests. This procedure continues until only significant variables are left. Gets technique benefits the analysis by providing a congruent parsimonious model by eliminating the insignificant variables and lags. Hence, Gets<sup>14</sup> help the estimation ensuring a greater degree of freedom for the variables to be estimated.<sup>15</sup> However, it should be noted that in ADL specification, the most crucial problem is the presence of autocorrelation in error term (captured by AR-test) which if it exists, would indicate inconsistent estimates. Therefore, various misspecification tests, including error autocorrelation, heteroscedasticity, non-normality and functional form misspecification, were applied to get reliable results.

#### IV. Results and Discussion

This section presents the chronological progress of the estimation process that was adopted for the empirical quantification of the relationship of interest. First of all, a general economic model was developed to find out the determinants of economic output in Pakistan. This model was investigated for a long-run co-integrating relationship using ADL specification. Following that, once a parsimonious specific model was obtained through Gets approach<sup>16</sup>, the effects of fiscal decentralisation proxies were analysed using the ECM setup associated with the given ADL model. The section concludes with the interpretation and discussion of the results.

##### 1. *Modelling Economic Output in Pakistan*

To start with, the most important thing to do is to identify the important variables, their adequate lags and to find the appropriate control variables that can best explain the situation in Pakistan. Hence, to examine the long-run relationship and

<sup>12</sup> *Automatic Econometric Model Selection using PcGets 1.0.*

<sup>13</sup> The Properties of Automatic GETS Modelling.

<sup>14</sup> For the analysis, this study uses the Autometrics option (built upon the PcGets module) of PcGive statistical software (version 13.30). The PcGets (c) is the automated version of the Gets approach, while Autometrics is developed in OXMatrix statistical software (version 6.30)

<sup>15</sup> Kirchgässner and Wolters (2007) applied similar Gets methodology to arrive at a parsimonious model of the identical specification

<sup>16</sup> It was established that co-integration exists among the variables in the general model.

identify important exogenous variables for the general economic model, the Autoregressive Distributed Lag (ADL) modelling approach was adopted [Hendry (1995), Pesaran (1997), Kiviet and Phillips (1992)]. Following the ADL methodology, to explain the long-run economic output, variables were expressed in levels. The soundness of the final specific model depends upon the adequacy of the initial general unrestricted model, which is assumed to correctly approximate the data generation process [Hendry and Krolzig (2004)]. Keeping this in mind, viable general model was framed whilst minimising the risk of missing out any important variable. Initially, five explanatory variables were identified including investment, government expenditure, trade openness, inflation and labour force for explaining the dependent variable, i.e. real GDP. The resulting conditional autoregressive distributed lag (ADL) model can be written as Equation (3):

$$\text{rgdp}_t = \alpha_0 + \delta_t + \theta D_t + \sum_{e=1}^m \beta_e \text{rgdp}_{t-e} + \sum_{f=1}^n \beta_f \text{inv}_{t-f} + \sum_{h=1}^p \beta_h \text{ge}_{t-h} \quad (3) \\ + \sum_{i=1}^q \beta_i \text{open}_{t-i} + \sum_{j=0}^r \beta_j \text{inf}_{t-j} + \sum_{k=0}^s \beta_k \text{lf}_{t-k} + \varepsilon_t$$

Important to state here that the inclusion of instantaneous effects for the explanatory variables leads to a relatively powerful co-integration test, provided that the explanatory variables are exogenous [Hassler and Wolters (2006)]. However, according to the specification used in this study, three explanatory variables (i.e. investment, government expenditure and trade openness) appeared as a ratio to GDP.<sup>17</sup> At the same time, the real GDP appears on the L.H.S. as the dependent variable, so any output shock will affect both sides of the equation simultaneously, which points to the endogeneity issue as both the sides of the equation can be affected by any random shock, simultaneously. Therefore, to have a plausible outcome, the contemporaneous effects were avoided for the above-mentioned explanatory variables and only their lagged values were used for estimation in Table 3. The deterministic part of the equation consists of a dummy variable 'D<sub>t</sub>' that represent the politically volatile years<sup>18</sup> while trend 't' was used to capture the effects of the time trend in the equation (if any). The general unrestricted model was framed using two lags as a rule of thumb for annual data. In addition, for estimation, all the data series were expressed in log form so that the coefficients could be explained as elasticity.

As the next step, once the appropriate specification is finalised, the automated general-to-specific (Gets) procedure for model selection was applied using PcGetsso as to eliminate the redundant regressors and to obtain a congruent parsimonious model. This procedure drops the insignificant variables out of the general

<sup>17</sup> where GDP was used as a measuring rod to capture the overtime behaviour of the variable

<sup>18</sup> These include disturbed election years (1977, 1988, 1991, 1993, 1997, 2007), invasion of Afghanistan and huge influx of refugees into Pakistan (1979), Nuclear tests (1998), Military Coup (1999) and year worse hit by terrorism and political instability (2008).

model without causing efficiency loss [Hendry and Krolzig (2005), (2001), Krolzig and Hendry (2001)]. Hence, during the selection process, two regressors, i.e. labour force and government expenditure, failed to gain statistical significance and were excluded from the final specific model. Furthermore, for investment, the 2<sup>nd</sup> lag remained insignificant and was eliminated. Last to mention is inflation, for which the contemporaneous effect and first lag was eliminated. Thus, the specific model contains investment, openness and inflation alongside the dummy<sup>19</sup> and trend. The general and specific model can be seen in Table 3.

Once the specific model was obtained using the PcGets, the Kiviet and Phillips (1992) test for co-integration was applied to the model (which is embedded in the PcGive unit root test)<sup>20</sup> to enquire the co-integrating relationship amongst the given variables. The Kiviet and Phillips (1992) test statistic has the empirical value equal to '-4.29' (statistically significant at 10 per cent). Thus, results reject the 'No Co-integration' null hypothesis, establishing that real GDP is co-integrated with the given explanatory variables and evidence exists for a long-run relationship among the given variables. Nevertheless, before proceeding further, it is important to check the economic validity of the resulting empirical estimates. The economic interpretation of the final specific model, results suggest that 10 per cent increase in investment (relative to GDP) will increase the level of real GDP by 4 per cent in Pakistan. The positive relationship of investment and GDP is thus an exposition of Solow (1956) and is in line with the already established empirical results by Barro (1991), Bleaney (1996) and Levine and Renelt (1992). Similarly, trade openness positively affects the level of economic output in Pakistan, which marks the importance of international trade. Lastly, the coefficient for inflation appears with a negative sign and is in accordance with Barro (1997) and Zhang and Zou (2001) and depicts the negative supply side shocks for Pakistan. The dummy representing the politically non-stable years also have posted a negative sign as expected. Hence, all the coefficients in the specific model are according to expectations, and the specific model parsimoniously explains economic growth in Pakistan. In addition, all the diagnostic tests against error autocorrelation (AR), heteroscedasticity (ARCH and hetero), non-normality (Normality) and functional form misspecification (RESET) were satisfied. Therefore, as the results were validated from the economic theory, have desirable econometric properties and co-integration is established, the next section is based upon the given specific model to enquire the effect of fiscal decentralisation in Pakistan using the ECM technique.

<sup>19</sup> Dummy for the political instability is retained due to its important nature and its potential effects on growth, despite being insignificant.

<sup>20</sup> To be noted here that the Error Correction term ( $rgdp\_I$ ) does not follow the standard t-distribution, instead, the PcGive unit root test provides the correct significance test for ADL representation of the models (see for details Banerjee and Hendry, 1992 and Ericsson and MacKinnan, 2002, Banerjee, 1993, pp. 54-55, Kiviet and Phillips, 1992).

**TABLE 3**  
Results for ADL Representation of General Economic Model  
(Dependent Variable-rgdp)

Variables		General ADL Model (with two lags)	Specific Model 1	Solved static LR Equation for Model 1	
Constant	Constant	3.80*	2.01***	Variables	Model 1
Real GDP	rgdp_1	0.56***	0.69***	Constant	6.57***
	rgdp_2	-0.001	----	inv <sup>#</sup>	0.24
Investment	inv_1	0.11*	0.07*	open	0.69***
	inv_2	-0.01	----	inf	-0.11***
Government Expenditure	ge_1	0.03	----	Dummy	-0.03
	ge_2	-0.01	----	Trend	0.04***
Openness	open_1	0.1	0.10**	----	----
	open_2	0.17**	0.11**	----	----
Labour force	lf	0.35	----	----	----
	lf_1	-0.3	----	----	----
	lf_2	-0.33	----	----	----
Inflation	inf	0.01	----	----	----
	inf_1	-0.01	----	----	----
	inf_2	-0.04***	-0.03***	----	----
Political instability <sup>#</sup>	D <sub>t</sub>	-0.01	-0.01	----	----
Trend	t	0.02**	0.01**	----	----
Number of observations		34	34	----	----
Number of parameters		17	8	----	----
PcGive Unit root test <sup>##</sup>		----	-4.29*	----	----
AR 1-2 test		1.9382 [0.1784]	1.6821 [0.2072]	----	----
ARCH 1-1 test		0.88209 [0.3547]	0.21440 [0.6465]	----	----
Normality test		3.8888 [0.1431]	2.1323 [0.3443]	----	----
hetero test		Not enough observation	0.89304 [0.5731]	----	----
RESET test		3.0451 [0.1002]	1.8114 [0.1851]	----	----

Source: Author's estimation.

Significant at 1%=\*\*\*, 5%=\*\*, 10%=\*, # marginally insignificant at 10% level of significance.

Note1:## PcGive Unit root test represents the Kiviet and Phillips (1992) test for co-integration.

Note2: All variables were expressed in logs.

## 2. Error Correction Model for Fiscal Decentralisation Variables

From the above discussion, it has established that the economic output and the explanatory variables, i.e. investment, openness and inflation are cointegrated. Hence, the specific model explains the long-run effects of explanatory variables in relation to real GDP. With the given evidence for co-integration, the inclusion of fiscal decentralisation proxies in the model is expected not to distort the established relationship. Therefore, it is reasonable to use the Error Correction Model (ECM) and analyse the relationship between fiscal decentralisation and economic growth. The proxies for fiscal decentralisation (i.e.  $fd_{tax}$ ,  $fd_{loc}$ ,  $fd_{trans}$  and  $fd_{tpr}$ ) were incorporated into the ECM to find out both the short-run and long-run effects of the variables of interest. However, the proxies of fiscal decentralisation were incorporated turn by turn into the model due to the degrees of freedom issue and to avoid possible collinearity among alternative measures of fiscal decentralisation in Table 4. Once again Gets approach was applied, however, is the variables of interest, both the dynamic and lagged level effects of fiscal decentralisation variables were kept fixed<sup>21</sup> (alongside the variables in levels, i.e. from Model 1, given at Table 3) and a restricted model is estimated with PcGets. Finally, the ECM specification of the estimated model can be presented algebraically as below in Equation (4) while the empirical results for the given specific models are reported in Table 4. The equation follows general explanation as is given for Equation (2) whereas two lags were used for the dynamic short-run effects while avoiding the contemporaneous effects for invand open.

$$\begin{aligned} \Delta rgdp_t = & v + \delta t + \theta D_t + \sum_{e=1}^m \beta_e \Delta rgdp_{t-e} + \sum_{f=1}^n \beta_f \Delta inv_{t-f} + \sum_{h=1}^p \beta_h \Delta open_{t-h} \\ & + \sum_{j=0}^q \beta_j \Delta inf_{t-j} + \sum_{k=0}^r \beta_k \Delta fd_{t-k} + \gamma_1 rgdp_{t-1} + \gamma_2 inv_{t-1} + \gamma_3 open_{t-1} \\ & + \gamma_4 inf_{t-1} + \gamma_5 fdi_{t-1} + \varepsilon_t \end{aligned} \quad (4)$$

## 3. Results

Results for the ECM models are contained in Table 4. Importantly, results satisfied the test for the long-run co-integrating relationship between fiscal decentralisation and economic growth in Pakistan. The ECM term, depicted by the lagged level dependent variable ( $rgdp\_1$ ), has values between 0.24 - 0.35<sup>22</sup> across alternative models. The PcGive unit root test<sup>23</sup> for the models once again confirms what was observed in

<sup>21</sup> With *PcGets*, variables of interest can be forced into the model by keeping their status as *F:fixed*, so as to avoid their deletion.

<sup>22</sup> Because the LR relationship for Model 3 is statistically insignificant.

<sup>23</sup> As the *PcGive* unit root test provides the significance test for the lagged dependent variable only (which in the ECM representation is not the error correction term) therefore, the p-values and critical values used for the significance for *PcGive* unit root test in Table 4 were obtained following the Ericsson and MacKinnon (1999), as elaborated *ECMtest.xls* (version 1.0) and discussed in Ericsson and MacKinnon (2002), pp. 316.



**TABLE 4**  
ECM Results for the Effects of Fiscal Decentralisation on Economic Growth  
(Dependent Variable  $\Delta$ rgdp)

		Model 2	Model 3	Model 4	Model 5
Constant	Constant	1.171	2.754**	2.253***	2.200***
Openness	$\Delta$ open_1	-0.119**	-0.115*	-0.119**	-0.124**
Inflation	$\Delta$ inf_1	0.034***	0.027**	0.023*	0.025*
Real GDP	rgdp_1	-0.24**	-0.38***	-0.35***	-0.34***
Investment	inv_1	0.073	0.081*	0.091*	0.104**
Openness	open_1	0.253***	0.206**	0.241**	0.235***
Inflation	inf_1	-0.042***	-0.031***	-0.035**	-0.038**
The ratio of Provincial tax revenues to Total Govt. revenues	$\Delta$ fd <sub>tax_1</sub>	-0.003			
	fd <sub>tax_1</sub>	0.044**			
The ratio of Provincial, local revenues to Total Govt. revenues	$\Delta$ fd <sub>loc_1</sub>		0.023		
	fd <sub>loc_1</sub>		-0.029		
Federal Transfers to Provinces as a ratio to Total Govt. revenues	$\Delta$ fd <sub>trans</sub>			0.074**	
	fd <sub>trans_1</sub>			0.007	
The ratio of Total Provincial revenues to Total Govt. revenues	$\Delta$ fd <sub>tp</sub>				0.083*
	fd <sub>tp_1</sub>				0.015
Dummy	D <sub>t</sub>	-0.014*	-0.01	-0.018**	-0.018**
Trend	T	0.010**	0.018***	0.015***	0.014***
Number of observations		34	34	34	34
Number of parameters		11	11	11	11
PcGive Unit root test <sup>###</sup>		3.63**	3.38	4.59**	4.72**
Long run Elasticity for Provincial tax revenue		0.187			
AR 1-2 test		2.5504 [0.1020]	1.3956 [0.2697]	1.4984 [0.2464]	1.5817 [0.2292]
ARCH 1-1 test		0.49767 [0.4856]	0.4699 [0.5005]	0.0355 [0.8518]	0.8684 [0.3584]
Normality test		1.1143 [0.5728]	0.7124 [0.7003]	0.4998 [0.7789]	0.1053 [0.9487]
hetero test		0.85085 [0.6353]	0.1968 [0.9906]	1.5195 [0.2146]	1.6805 [0.1629]
RESET <sup>23</sup> test		0.85351 [0.4402]	0.4194 [0.5240]	1.1967 [0.3220]	0.9589 [0.3995]

Source: Author's estimation.

Significant at 1%=\*\*\*, 5%=\*\*, 10%=\*, # marginally insignificant at 10% level of significance.

Note1:## PcGive Unit root test represents the Kiviet and Phillips (1992) test for co-integration.

Note2: All variables were expressed in logs.

the ADL model. The error correction term indicates that following a shock, the relationship will converge to its long-run steady state at the given rate (i.e. 0.24 - 0.35) for alternative models with each period as presented in Table 4. Hence, the analysis provides evidence regarding the long-run co-integrating relationship.

To start with, Table 4 contains the result for the different aspects of fiscal decentralisation. As two measures were used to gauge provincial fiscal autonomy, i.e. sub-national government tax revenues and local revenues, Model 2 presents the relationship between 'provincial tax revenues' and output growth.  $\Delta fd_{tax\_1}$  reports the dynamic short-run effects for the stated variable on the economic growth and is statistically insignificant with a negative sign. Despite being insignificant, it guides us that an increase in provincial revenue raising capacity may have short-run distortionary effects for the economy. On the contrary, over the long-run, enhanced provincial taxation powers positively contribute to economic output. This is depicted by the lagged level 'provincial tax revenues' ( $fd_{tax\_1}$ ), which is statistically significant and has a positive sign. Thus, results suggest that provincial fiscal autonomy makes the SNGs more productive and responsible, which stimulate long-run economic output. Adjustments in provincial taxes might cause short-run fluctuations in the economic output, but over the long-run, it contributes positively. According to Model 2, the long-run elasticity for provincial tax revenues is 0.18.<sup>24</sup> Due to the small sample, it would not be advisable to go into greater details regarding the magnitudes; rather, signs are more important in this analysis to detect the effects of alternative fiscal decentralisation reforms policies.

However, same effects could not be validated for the second proxy of provincial fiscal autonomy, i.e. the provincial local revenues as presented in Model 3 within Table 4. The coefficients for the  $fd_{loc}$  turned statistically insignificant. However, surprisingly the lagged level coefficient (i.e.  $fd_{loc\_1}$ ) has a negative sign. This hints that any increase in the unplanned revenues of provincial governments lacks any positive impact on the economic output. Despite the fact that  $fd_{loc}$  is statistically insignificant, still, the multiplier effect is very small (0.076). This suggests that economic returns from provincial fiscal autonomy, in the form of higher taxation powers only, have positive long-run effects for the GDP of Pakistan.

In this study, the separation of distinct aspects of fiscal decentralisation provides an opportunity to have an in-depth analysis of different sources of decentralisation. In this regard, the third important measure for fiscal decentralisation was the 'federal transfer to provinces' (Model 4). This measure characterises the partial fiscal decentralisation, and it has posted reverse short-run and long-run implications in terms of significance as compared to provincial tax autonomy measure that is discussed earlier. Results indicate that federal transfers have positive effects in the short run only. According to the results, in the short-run, a 10 per cent increase in federal transfers in-

<sup>24</sup>Where  $k = \gamma 5i - \gamma I$ , in accordance with equation (4) specification, and  $i$  refers to proxy for fiscal decentralisation variable which is  $fd_{tax}$  in this case.

creases real GDP by 0.7 per cent; nevertheless, this arrangement will not cause any long-run contribution as  $fd_{trans\_1}$  remains statistically insignificant. This shows that any further increase in federal transfers, that constitute enormous portion of the provincial revenues, is having no effect towards the long-run economic output.

Lastly, as total provincial revenues were dominantly financed through federal transfers, similar results were obtained for  $fd_{pr\_1}$  as well, i.e. having significant short-run effects only (Model 5). Empirical results hence suggest that an increase in total provincial revenues without increasing the provincial fiscal autonomy will not contribute to the long-run economic productivity. Thus, the current mechanism of increasing total provincial revenues in Pakistan through higher federal transfers only, seems ineffective in enhancing the economic efficiency of the provinces and the continuation of such policy might lead to diseconomies. The emphasis is therefore needed to alter the respective share of own revenues and federal transfers in provincial budgets and to encourage provinces to generate more revenues from their resources.

Finally, the signs of the control variables across different models make one confident of the fact that the results are robust. The investment measure had insignificant short-run effects and was therefore eliminated following the general-to-specific (Gets) approach. However, it produced statistically significant lagged level effects ( $inv\_1$ ) in three out of four models in Table 4. Similarly, openness measure had produced the statistically significant short-run as well as long-run coefficients. It has a negative effect on economic growth in the short run which seems to be driven by the heavy imports and trade deficits. But it is well established in the literature that international trade enhances economic growth, and the same is depicted by the statistically significant positive coefficient for openness, i.e.  $open\_1$ . Moreover, inflation produced a statistically significant positive short-run effect, but it posted negative lagged level effects which is consistent with economic theory. Thus, variables continued to carry the same signs and significance with comparable magnitudes as indicated in the general economic model in Table 3 and results were consistent across the given ECM models in Table 4. Lastly, the same control variables across different models (for alternative measures of fiscal decentralisation) allows for precise comparison among available estimates and help in better analysis. Most importantly, the control variables and proxies for fiscal decentralisation have produced almost the same results with comparable magnitudes, signs and significance in Table 4.

#### 4. Discussion

The highlight of this analysis is that to our knowledge and it is among the limited studies that applied the co-integration technique to the topic and have separated the immediate effects from that of the long-run implications of fiscal decentralisation related to economic growth in Pakistan. As different measures of fiscal decentralisation have been used; this exercise identified the avenues which can truly help in enhancing

the long-run economic growth. Short-run effects helped in recognising the instant effects of a policy change, whereas the long-run analyses bring to the light the actual economic contribution of the fiscal decentralisation stance. Thus, despite the fact that fiscal decentralisation is a long-run phenomenon, this study also makes the reader aware of the immediate consequences of a resource shift policy and with this study both the effects can be analysed simultaneously.

The empirical analysis made it clear that fiscal decentralisation influences economic growth only via the channel of enhanced efficiency. Out of the given fiscal decentralisation measures, only provincial tax autonomy depicted long-run positive implications which reflect that increase in provincial fiscal autonomy will improve economic productivity. Findings suggest that if SNGs are given appropriate revenue raising responsibilities, it will enhance economic growth through the channel of fiscal decentralisation. This mechanism increases their capability and makes the SNGs innovative as well as responsible [Oates (1993), Thornton (2007), Martinez-Vazquez and McNab (2003)]. Thus, provinces respond efficiently to local needs [Brennan and Buchanan (1980)] due to the yardstick competition [Besley and Case (1995)] that in turn increases the productivity of economic agents and stimulates economic growth. Moreover, the difference between the coefficients of  $fd_{tax}$  and  $fd_{loc}$  reflects that provincial tax revenues are relatively more efficiency-enhancing and reliable source of SNG revenues. Therefore, it has a positive impact on economic growth as compared to revenues generated from non-tax sources. Thus, with the given fiscal decentralisation system in Pakistan, provincial tax autonomy in domestic revenue generation has not yet achieved its growth consistent optimum level, and there are opportunities available which can stimulate economic growth.

On the contrary, federal transfers<sup>25</sup> could not demonstrate to be productive in terms of its long-run contribution to economic output. There can still be certain social dimensions attached to federal transfers, but we have no evidence for economic returns. Thus, the poor provincial capacities to generate its own resources and dominant dependence on federal transfers seem to have undermined the long-run net effects of fiscal decentralisation in Pakistan. As results differ for distinct fiscal decentralisation measures in their short-run and long-run implications, these raise concerns that what is the right way to decentralise.

As results differ in their short-run and long-run implications for distinct fiscal decentralisation measures, these correctly identify weaknesses of fiscal decentralisation mechanism. In Pakistan, provinces had negligible taxation powers<sup>26</sup> which make around 15 per cent of total provincial resources on average over the period under analysis. Similarly, provincial, local revenues, which include both the tax as well as

<sup>25</sup> Despite being a dominant part of provincial revenues in Pakistan (76 per cent to the provincial budgets, on average),

<sup>26</sup> While it was recorded as only 7 per cent of total provincial revenues in 2009.

non-tax revenues, has contributed around 23.5 per cent to total provincial revenues<sup>27</sup> on average over the period 1974-2009. On the other hand, federal transfer<sup>28</sup> has constituted, on average 76 per cent of the total provincial revenues. What seems obvious from this information is that in Pakistan, the focus of decentralisation was mainly through the partial fiscal decentralisation mechanism. It was evident from this analysis that any further increase would not generate any long-run positive outcome for economy of Pakistan in the prevailing state of affairs.

Moreover, as federal transfers were being decided only on the basis of a single criterion (i.e. population); thus, it merely presented the expenditure needs of SNGs. Resource distribution formula in Pakistan was deficient of any consideration for the efficiency aspects, which is the main stay of fiscal decentralisation theory. Similarly, federal transfer to provinces represents transfer payments to the provincial governments from the funds that are already collected by the federal authorities, therefore; on its own, it will not stimulate the economic efficiency of the provinces. Instead, federal transfers might have resulted in higher consumption spending by SNG's, not necessarily in accordance with local needs. Rodden (2002) stated that increase in transfers from national to SNG lead to much higher consumption expenditures as compared to similar increase originated from the local resources, which means that provincial fiscal autonomy makes the SNGs more responsible. The same pattern was observed by Ahmed et al. (2007), that with the increase in federal transfers, the non-developmental expenditures of the provinces had increased, which had no bearing on long-run economic output through the channel of fiscal decentralisation.

In this case, the study of Pakistan, excessive dependence on federal transfers has failed to affect the provincial capacity to grow optimally and bared efficient contribution to long-run economic growth. One can say that under the given fiscal decentralisation system, provinces could have been placed in a better position so that these could have ensured advantage of these transfers. This suggests that during the period under analysis, the decentralisation mechanism in Pakistan lacked the required incentives that could make the SNGs more productive, responsible and innovative. Finally, the inconsistencies of fiscal decentralisation mechanism and disturbed political setup in the country also had an impact on the outcome. In brief, the fiscal decentralisation mechanism adopted in Pakistan was found to have avenues to explore to produce optimum results.

## V. Conclusion

Lower own tax revenue is an obstacle in achieving the true local fiscal autonomy and would restrict its benefits in Tiebout style. This study captured different aspects

<sup>27</sup> Although it was recorded as 20 per cent in 2009.

<sup>28</sup> While its contribution was recorded as 80 per cent in year 2009.

of fiscal decentralisation, i.e. SNG's fiscal autonomy and factor presenting partial fiscal decentralisation. By using different measures for fiscal decentralisation, this piece of research tried to cover for the Thornton (2007) criticism for not differentiating between revenues accruing from own provincial sources and other sources. With the revenue approach, it was tried to avoid the criticism attached with studies using the expenditure approach for not discriminating between the expenditures made by SNGs indigenously and those mandated by national governments. In addition, the revenue approach helped to identify the economic implications of alternative policies of fiscal decentralisation. Results were supportive of the fact that SNGs should be incentivised for own-source revenue generation, which will help in achieving higher economic growth. Moreover, in terms of economic output, the resource distribution formula for federal transfers should contain certain efficiency enhancing measures; otherwise, it can fail to have any long-run positive effects towards economic growth.

This study also provides important results for Pakistan and identified the areas for focus. Analysis indicated that SNGs had limited fiscal autonomy and if these were allowed and incentivised for more revenue generation, it will help in achieving higher economic output for Pakistan. For the other important aspect of fiscal decentralisation, i.e. federal transfers, it was observed that any further increase, without taking appropriate measures, will have negative effect on the economic growth in Pakistan. Similarly, the provincial revenues share of SNGs appears to have limited long-run effects under the given resource distribution mechanism.

At this stage, it is also important to reflect upon the prevailing political realities in Pakistan. Issues like the level of benevolence, administrative capacity, corruption and leviathan government at the sub-national level are the issues that can influence outcomes of devolution in Pakistan. Nevertheless, the original assumptions contained in decentralisation theory might not be completely untrue as discussed in the second-generation theories of fiscal federalism. Representatives from the sub-national level are relatively more accessible to local people as compared to national level representatives. Politicians engaged at the sub-national level are more informed about local issues. They have comparatively frequent interaction with local people as compared to national-level politicians, doing national or regional politics. Hence, even if the certain assumptions are weak to hold in case of Pakistan, sub-national representatives are still more accountable being locally accessible and even more importantly, being willing to get re-elected.

To conclude, there is a need to balance the provincial fiscal autonomy factors to have future economic gains. Most importantly, federal transfers were apportioned following a single-criterion formula, so it is potentially available to tape by experimenting with the diversification of the resource distribution formula. In brief, if appropriate efficiency-enhancing measures are taken, fiscal decentralisation in Pakistan has the potential to contribute to the economic productivity in the long-run.

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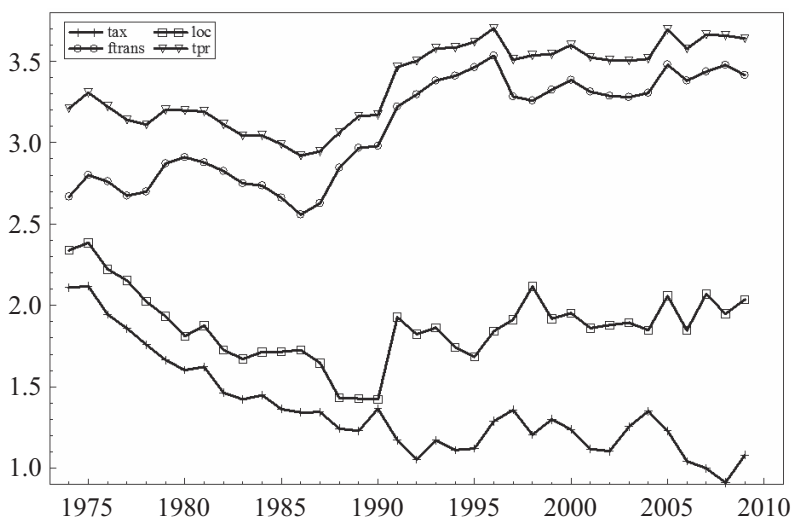
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## APPENDIX A

### Graphical Representation of the Fiscal Decentralisation Measures



**FIGURE A-1**

Fiscal Decentralisation Measures (as ratio to total government revenue)

Source: Author's estimation.

Note1 Total government revenues consists of federal and provincial government revenues.

Note2 Tax indicates Provincial Tax Revenues ratio,

loc refers to Provincial-Local (tax+ non-tax) Revenues ratio,

frans refers to Total Federal Transfers to Provinces ratio,

tpr presents the ratio of Total Provincial Revenues

**APPENDIX-B**

**TABLE B-1**  
Summary Statistics of Variables used in the Regression

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
Real GDP	36	29228.21	14197.75	9650.33	57942.65
Investment	36	18.49	1.82	13.37	22.5
Government expenditures	36	9.91	1.272	8	13.2
Trade openness	36	34.24	3.062	27.72	38.91
Government revenues	36	10.64	1.187	7.13	12.02
Macroeconomic stability	36	9.11	5.159	3	27
Labour force	36	30.04	0.939	28.13	31.73
Provincial tax revenue	36	4.097	1.445	2.49	8.32
Provincial local revenue	36	6.672	1.515	4.15	10.86
Federal transfers	36	22.96	6.885	12.91	34.23
Total provincial revenue	36	29.61	7.028	18.53	40.54
Political instability	36	0.278	0.454	0	1

*Source:* Author's estimation.