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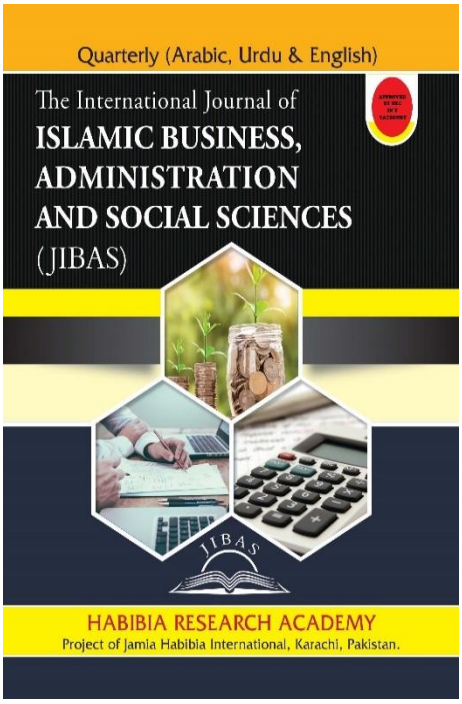

TOPIC:
ANALYSIS OF SOCIAL AND INSTITUTIONAL DETERMINANTS OF TAX REVENUE BUOYANCY IN PAKISTAN

AUTHORS:

1. *Naseer Shahzada, PhD Scholor Preston University, Kohat Islamabad Campus. Email ID: economypk@gmail.com Orcid ID: https://orcid.org/ 0000-0003-2075-593X*
2. *Prof. Dr. Khalid Mahmood Mughal, HOD and Associate Professor, Department of Economics, Preston University, Kohat Islamabad Campus. Email ID: drkhalid0@gmail.com*

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ANALYSIS OF SOCIAL AND INSTITUTIONAL DETERMINANTS OF TAX REVENUE BUOYANCY IN PAKISTAN

Naseer Shahzada, *Prof. Dr Khalid Mahmood Mughal,*

ABSTRACT:

This study intended to explore the effect of social and institutional variables on tax buoyancy in Pakistan. The study employed the Time Series Data from 1991 to 2021. The analysis was done through Engel Granger type of co-integration and ARDL co-integration. The study revealed that buoyancy (-1), literacy rate, life expectancy, fiscal decentralization, rule of law and political stability have direct impact on the tax buoyancy. While unemployment, urbanization, corruption and Govt, effectiveness have inverse impact on the tax revenue buoyancy. This study advised to eradicate the unemployment and to increase the documentation of economy. This study also advised to enhance elementary and higher education, take measure to improve the rule of law and to create a transparent and accountable legal system. Again it also suggested to avoid political victimization, conduct free and fair election, should make an effective local body system, should work on the Devolution of Power & Responsibility, promote good governance, restructure the tax system, to make the institutional effective and judicious.

KEYWORDS: *Institutional and social determinants, Autoregressive Distributive Lag Model (ARDL), Tax Buoyancy, Unemployment, Rule of Law. JEL Classification: C5, H2, H6*

1. INTRODUCTION:

Social and institutional factor have important impact on tax revenue and its buoyancy. The effectiveness of the tax policy is measured by tax buoyancy. The country with low tax buoyancy will have low tax to GDP ratio, high fiscal deficit and high debt. While a country with high buoyancy and elastic tax system will have high tax to GDP ratio, fiscal surpluses and low debt. The developing countries have low tax buoyancy, which has generated unsustainable debt. To decrease the budget deficit, the developing countries must increase their tax buoyancy. To achieve this objective, the fiscal authorities must know the various types of determinants of tax revenue buoyancy. Some determinants are economic, social, political and institutional, (Dioda, 2012; Sheikh et al., 2018).

The tax system of Pakistan was inelastic and non-buoyant and it was unable to raise sufficient tax revenue along with increase in GDP, while public expenditure was more elastic and rapidly increased along with GDP. This has created huge fiscal deficit and it was 8.1 per cent of the GDP exceeding 3.5 trillion PKR, (Pakistan Economic Survey, 2020-21). Shahzada et al. (2016) stated that Pakistan was unable to raise sufficient tax revenue and buoyancy of tax was less than unity. While public expenditures were highly buoyant with GDP (Wagner, A, 1911). Wagner explained the nexus of public expenditures and GDP and stated that the public expenditures have increased more proportionally with GDP because an increase GDP would increase demand of the public goods, which increase the

public expenditures. This would increase the public deficit, public debt and debt repayment and servicing.

Buoyancy gauges the effectiveness of fiscal policy, higher the buoyancy the better will be the taxation system to raise revenue, while a non-buoyant taxation system will be unable to raise enough revenue to meet the government expenditures, ultimately it will have to borrow, which will accumulate public debt. To predict the fiscal deficit and public debt, it is necessary to calculate the buoyancy of tax revenue. Moreover, to manipulate the tax buoyancy and increase tax revenue the tax authority must know the main determinants of the tax buoyancy and tax revenue, using these handles tax authority can manipulate the tax policy and would be able to increase tax revenue, decrease fiscal deficit and debt burden. The intentions of this research are the quantification of the major institutional and social determinants of the tax revenue.

Buoyancy is define as the responsiveness of tax revenue to GDP or one per cent change in GDP brings how much per cent change in the tax revenue. It consists of automatic response of tax revenue to GDP and response generated by Govt measures to increases taxes. Government measures include reforms to increase tax revenue, which include changes in the tax base and tax rate. Shahzada et al. (2016) stated that

Tax Buoyancy= Percentage change in Revenue ÷ Percentage change in GDP

Tax buoyancy has two parts: buoyancy of tax to base and buoyancy of base to the GDP.

The buoyancy was calculated by multiplying tax to base buoyancy and base to GDP buoyancy. The buoyancy of tax revenue could be greater than one and elastic and can be less than one and inelastic. The buoyancies of tax revenue and public expenditure are critical for developing economies. A high tax buoyancy ensures sufficient tax revenue for public expenditure and reduces the fiscal deficit and public debt burden. An inelastic taxation system generates a fiscal policy that does not raise sufficient revenue for Government expenditure and creates a huge fiscal deficit and public debt burden. The buoyancy of the taxation system of Pakistan was 0.63, which revealed a non-buoyant tax system (Rasheed, 2006). The tax buoyancy for the Netherlands was 0.9, (Wolswijk, 2007). The buoyancy of tax in Pakistan was less than one, Shahzada et al. (2016).

There are many determinates of buoyancy of tax revenue, which are economic, political, institutional and social. The intention of this research is to quantify the impact of the institutional and political variables on the tax buoyancy in Pakistan. There are few studies in the literature on the determination of tax revenue and very few for Pakistan that have analysed the economic and intuitional determinants of tax buoyancy. Ehrhart (2009) stated that political factors also affect the tax revenue of a country. Chaudhry and Munir (2010) concluded that major social determinants of tax buoyancy were political stability, tax base, agriculture sector, foreign aid and literacy rate. Sarwar and Ashraf (2016) concluded that public efficiency, law, and corruption had an inverse impact on tax collection. Sharma and Singh (2018) concluded that LFPR, GDP, Currency, FDI, trade and agriculture have a significant impact on tax in India.

Subhani et al. (2018) concluded that independent formulation of economic policies, rule of law, and control of corruption have positive, while political interferences have an inverse impact on buoyancy. Sheikh et al. (2018) analysed the economic handles of tax buoyancy in Pakistan, which were net official development assistance and the manufacturing sector. Mahfoudh and Gmach (2021) stated that urbanization, monetary depth, corruption, law, political stability were the major factors of the tax revenue buoyancy. Ahmad et al. (2016) concluded that determinants of the tax revenue were tax base, GDP, tax compliance, underground economy, and public regime.

Many factors affect the tax revenue and its buoyancy, but important are social, institutional, and political factors. The major social handles of tax buoyancy are urbanization, life expectancy, unemployment, literacy rate, political stability, fiscal decentralization, corruption, government effectiveness and rule of law. The relationship between the tax revenue, buoyancy and its major social, political, and institutional handles is explain as followings.

The process of urbanization also affects the tax revenue and its buoyancy. Tax collection would be easy in urbanized large population in a very close circumference with least cost, (Kenny & Winer, 2006) and (Riezman & Slemrod, 1987). Urbanization led to economies of scale, decreasing evasion, increasing tax base and tax revenue (Kau & Rubin, (2002). Similarly, Tilly (1992) also observed that urbanization has increased the tax revenue. The literature concluded that the results of decreased administrative cost would have a direct impact on consumption and income tax collection.

Life expectancy can also affects on tax buoyancy. Nuță and Nuță (2020) stated that demographic and institutional factors affected the tax revenue and other fiscal variables. Calahorrano et al. (2019) concluded that demographic variations have a negative impact on income tax. The increased life expectancy involved an increased ageing population that would decrease the labour force participation rate, employment level, economic activity and tax revenue from income taxes, although taxes from capital gain and social security increased, **Fehr et al. (2008)** and Kudrna **et al. (2014).**

The important social variable that can affect tax revenue and tax buoyancy is the unemployment, which can reduce tax revenue through two approaches: one is the direct approach in which unemployed person is unable to pay the income tax and reduces the tax collection. The second approach is that unemployment decreases the GDP, tax base and tax revenue. Okun (1962) stated an inverse link between unemployment and GDP. He stated that one per cent increase in unemployment would decrease the GNP by 3 per cent. Later, Samuelson and Nordhaus (Samuelson & Nordhaus, 1995) refined Okun's law by suggesting that one per cent increase in unemployment would decrease the GDP by 2 per cent, which in turn tax revenue collection as well the buoyancy of the tax revenue decreased.

Another important social variable that can affect tax revenue and its buoyancy is literacy rate. Ajzen and Fishbein (1980) stated two theories about the nexus between the literacy rate, human attitude, and tax revenue; the Reasoned Action (TRA) and Planned Behaviour theories (TPB). The first theory suggested that the taxpayer's attitude was determined by

their intention to pay taxes. Their intentions would form their attitude toward the behavior of taxpaying and subjective norms. Ajzen (1991) explained the second theory of human attitude towards tax, where he stated that whether an individual would adopt a behavior depends upon the purpose to undertake it, the more inclined towards the behavior, the more would be the probability of its occurrence. Mutascu and Danuletiu (2013) also explained the literacy rate was a handle of tax revenue. He concluded that literacy rate has non linear inverse nexus with the tax revenue.

Income inequality also affects the tax revenue and public expenditure. The income inequality has an inverse effect on the tax revenue while its increase enhances the public expenditure. Islam et al. (2018) revealed that income inequality has an inverse impact on the tax revenues.

There are various institutional factors, which also affect the tax revenue and tax buoyancy. Numerous studies have concluded that institution was the important determinant of tax revenue. Ghura (1998) explained that corruption has decreased tax revenue and tax to GDP ratio; rise in corruption was linked with low tax revenue. Bird et al. (2008) identified the regulations, rule of law and corruption as the major determinants of the tax revenue and tax to GDP ratio. Democracy has also increased the tax revenue and public expenditure (Meltzer & Richard, 1981). Democracy has positive affect on tax revenue (Kenny & Winer, 2006). Political instability and corruption were critical handles of tax revenue (Bird et al., 2008; Gupta, 2007). Gupta (2007) tested that the important handles of resource mobilization in various countries were economic, political stability and law and order.

Eltony (2002) inferred that the major handles of the tax revenue were the mining sector, agriculture sector and per capita GDP. Again, government attitude, quality of tax administration and political system were important handles of taxes. Bird et al. (2008) inferred that increased accountability and control of corruption were vital handles of tax revenue.

Javid and Arif (2012) concluded that bureaucracy, law and order and corruption has increased the tax revenue. Sarwar and Ashraf (2016) inferred that democracy has positive while autocracy has negative effect on the tax revenue.

Eltony (2002) concluded that the important institutional and non-institutional determinates of the tax revenue were mining, agriculture sector, per capita GDP, foreign debt, government attitude, quality of tax administration, political system, and other Government institutes. Bird et al. (2008) concluded that voice and accountability, control of corruption, institutional performance and quality of institution were the important determinants of tax revenue. Addison and Levin (2008) stated that the tax-to-GDP ratio was inversely related to the population and agriculture sector while positively related to the Value Added Tax. The bureaucratic quality, law and order and control of corruption, per capita GDP, agriculture value addition, trade openness, debt and population growth have positive impact on tax revenue (Javid & Arif , 2012).

Sarwar and Ashraf (2016) inferred that bureaucratic efficiency, rule of law, and corruption were negatively affecting tax collection while political regime was positively related to the tax revenue. Subhani et al. (2018) concluded that independent formulation of economic

policies has positive effect while political interference has an inverse impact on tax buoyancy. Regulatory quality, rule of law, corruption, and political stability have also positive impact on tax buoyancy. The agriculture sector, financial intermediation, natural rents, education, population share above 65 years, quality of government, and democracy have statistically significant impacts on the tax revenue (Castañeda, 2018).

Pakistan has faced a huge and continuously increasing tax revenue deficit over its expenditures for decades, the deficit in fiscal operation has dire consequences and led to borrow heavily internally and externally. The borrowing ultimately decreased the internal and external value of the currency and caused hyperinflation. To have a deficit-less fiscal policy, boost the tax revenue, and reduce the fiscal deficit, it was necessary to identify different determinants of the buoyancy of tax revenue, Ahmed (1994). Therefore, there was a need to investigate how an efficient fiscal policy could be formulated. This study intends to evaluate the social and institutional determinants of the tax revenue's buoyancy.

This study can help the fiscal policy authorities to formulate such policy which can reduce the fiscal deficit. The reduction in the fiscal deficit can decrease the growth rate of the public debt. The reduction in the growth rate of public debt can reduce the debt repayment and servicing, which can provide ample amount of funds for developing purpose; consequently, it can boost the economic growth of the Pakistan. Moreover, it can also reduce the unemployment and increase the employment opportunities. This study investigates the nexus between social and institutional handles on tax buoyancy.

2. Review of Literature

Lavigne (2006) studied the institutional and political handles of fiscal policy in developing countries. Fiscal status was taken as the dependent variable while the legislature, election years, electoral system, government stability, income inequality, subsidies, ethnolinguistic fractionalization, rule of law, democratic accountability representing the quality of economic and political institutions. He concluded democratic institutions and legislative has positive while subsidies have inverse impact on tax revenue.

Ehrhart (2009) investigated the impact of the political regime on the total tax revenue in developing countries. They concluded that country with long lasting democracy has a higher tax revenue raising capacity, high tax-to-GDP ratio, and high total tax revenue buoyancy. A country where strong interest groups existed the tax revenue raising capacity was low and having a non-buoyant tax system.

Chaudhry and Munir (2010) inferred that the important handles of taxes in Pakistan were its base, agriculture, foreign aid and literacy rate. They also concluded political stability was the important factor that increased the tax revenue.

Addison and Levin (2012) evaluated the handles of total tax revenue of 39 countries in Africa. The results revealed that the tax-to-GDP ratio was positively affected by trade, inversely related to the population and agriculture sector. Urbanization and conflicts have direct while Aid has inverse impact tax revenue. They proposed to promote trade and control the population.

Castro and Camarillo (2014) studied critical handles of tax revenue in 34 OECD countries. The results showed that per capita, the industrial sector, and political rights have positive

impact while the agricultural sector, the FDI, civil liberty and gross fixed capital formation have a negative impact on tax revenue.

Amin, et al. (2014) evaluated the social handles of tax revenue in Pakistan. The independent variables were corruption, political instability, trade openness, real per capita income, and inflation. They inferred that there was an inverse relationship between corruption, inflation, political instability and tax revenue. Moreover, trade and GDP have a positive impact on tax revenue.

Sarwar and Ashraf (2016) evaluated the impact of institutional factors on the buoyancy of taxes. They inferred that the tax collection was negatively affected by bureaucratic efficiency, rule of law, and corruption. This study suggested that the nature of the relationship between tax buoyancy and institutional characteristics of the system were sensitive to different categories of political regimes i.e., Democracy and Autocracy.

Ahmad et al. (2016) evaluated the social and economic handles of tax revenue in Pakistan. narrow tax base, economic activity, tax compliance, informal economy and Government regime. They concluded that GDP and tax compliance and democracy were the positive determinants of tax revenue, while black economy and tax base were inversely related to tax revenue.

Shahzada et al. (2016) estimated the tax buoyancy for Pakistan. They concluded that the buoyancy of tax revenue in Pakistan was less than unity and the tax system of Pakistan was inelastic and non-buoyant. They advised to extend the tax base by reducing the informal sector of the economy. He also advised the digitization of the economy to increase tax revenue and tax buoyancy.

Simbachawene (2018) analysed the determinants of tax revenue in Tanzania. He used economic, structural and institutional handles to gauge their impact on tax revenue. The study concluded that Govt effectiveness affects tax revenue negatively while regulatory quality, rule of law and control of corruption have positive impact on the tax revenue.

Subhani et al. (2018) analysed the institutional factors of tax revenue in Pakistan. The independent formulation of economic policies has a positive while political interferences in economic policies distort buoyancy. Regulatory quality has a positive impact on buoyancy. The strict tax inherence policies have a positive impact on buoyancies. Rule of Law, control of corruption and political stability also have a positive impact on tax buoyancies.

Umoh, et al. (2018) studied political and institutional handles of revenue policy in West Africa. They suggested that the Governments of West African economies were either unwilling or unable to adequately implement counter-cyclical fiscal policy. Moreover, they also concluded that fiscal policymaking has generally been driven by political and institutional factors, rather on economic considerations. Lastly, the core politico-institutional factors that determined the fiscal persistence included corruption, government effectiveness and the rule of law.

Castañeda (2018) evaluated the impact of the structural, political, tax morale and tax administration variables on the tax collection of the 138 countries of the world. The variables Agriculture sector, financial intermediation, natural rents, education, dependent

population, quality of Government, and democracy have positive impacts on the tax revenue.

Rahim and Asma (2019) investigated the impact of various structural and economic factors on the tax revenue of developing countries. The results concluded that the agriculture, industry, and services sectors urbanization and accountability have a positive influence on the tax collection while inflation, corruption and trade openness have an inverse impact on the tax revenue.

Gupta et al. (2021) studied the institutional and political handles of tax rates in Sub-Saharan Africa. The results suggested that institutional factors were more important than political factors. Better institutions were associated with decreased tax rates, while lack of accountability and polarization were the caused to increase tax rates. The ideology of the Govt has inverse impact on tax rate.

Akintoye (2022) evaluated the influence of political stability and violence and economic factors on tax revenue in Nigeria. He concluded that there was a direct nexus among political stability, terrorism and tax revenue, which were aligned with a priori expectation. He inferred that Govt should focus on political stability and the prevention of terrorism.

Carnevin et al. (2023) estimated the tax revenue buoyancy for the 185 countries of the world. The result revealed that the tax buoyancy for these 185 countries in long run was about unity. While the short-run buoyancy was far less than unity. They depicted that the tax system in world was inelastic in short run.

Tagem and Morrissey, (2023) investigated the institutional handles of tax capacity in 39 sub-Saharan countries. They stated that corruption and accountability have inverse impact on the tax capacity while democracy has the direct impact on the tax capacity.

2.1. Conclusion.

Based on literature review this study identified that major determinants of the tax buoyancy are social and institutional. The study concluded that major social and institutional determinants were Unemployment, Urbanization, Literacy rate, Life expectancy, Rule of law, Political stability, Government effectiveness, Corruption, and Fiscal decentralization. The determinants of the tax buoyancy for Pakistan were analysed by few authors among which famous were Ahmed (1994), Sarwar and Ashraf (2016) and Subhani et al. (2018). This study intended to analyse the economic, social, and institutional determinants of tax buoyancy.

3. Theoretical Framework and Econometric Methodology

The objective of this research study is to identify the various social and institutional handles of the tax revenue's buoyancy for Pakistan. There is a little research available on the handles of the tax revenue's buoyancy. There are various theories that governs the nexus between the tax revenue and institutional and social determinants. The relationship between the tax revenue buoyancy and its handles is explained by following theories and empirical studies.

Urbanization meant a large population in a closed circumference, which had lowered the cost of tax collection and increased the tax revenue (Kenny & Winer 2006). Urbanization could lead to economies of scale, decrease evasion, increase base and tax revenue, (Kau &

Rubin, 2002). It had reduced the costs of direct and indirect taxes (Aizenman & Jinjarak, 2008). Urbanization had eliminated the informal economy and tax collection (Chilima, 2005).

The increase in life expectancy is always accompanied by a decrease in birth rate and tax revenue. Calahorrano et al. (2019) confirmed that an increase in life expectancy and reduction in birth rate have significantly reduced the tax revenue. They also concluded that expected demographic changes have a clear negative impact on income tax revenue. The increased life expectancy would increase aging population that decrease the LFPR, employment, GDP and tax revenue **Fehr et al. (2008)** and **Kudrna et al. (2014).** The proponents of positive effects of health on tax revenue explained it through endogenous growth model, which stated that health could boost income growth through human capital and as a central variable in growth model, (Acemoglu & Johnson, 2007).

Unemployment is defined as the person who is willing to work at prevailing wage rate and actively searching for job for four weeks but he could not get the job. Unemployment can reduce tax revenue by two approaches, one is direct approach in which unemployed person is unable to pay the income tax and reduces the tax collections. The second approach is that unemployment decreases the GDP through **Okun's law,** tax base and tax revenue. Arthur Okun (1962) stated an inverse link between the unemployment and GDP, one per cent increase in unemployment would decrease the GNP by 3 per cent. Samuelson and Nordhaus (1995) have refined it later on where they suggested that one percent increase in the unemployment would decrease the GDP by 2 percent. Therefore, when one percent unemployment occurred it would reduce the GDP by 3 percent, which would decrease the tax revenue and its buoyancy.

Higher literacy rate always produced economic efficiency and civic sense. The higher the literacy rate generates the higher civic senses and greater tax revenue. Ajzen and Fishbein (1980) stated two theories about the nexus between the literacy rate, human attitude and the tax revenue collection. The first theory was the Theory of Reasoned Action (TRA), suggested that the taxpayer's attitude was determined by their intention to pay tax and this intention in turn formed their attitude toward the behaviour about the taxpaying and subjective norms. Ajzen (1991) explained his theory of planned behaviour (TPB), where he argued that the key determinant of whether an individual would involve himself in a particular behaviour was the purpose to undertake the behaviour itself, that more the intention to carry out the behaviour, the higher would be the likelihood of an individual towards engaging in the behaviour. Mutascu and Danuletiu (2013) explained non-linear and inverted U-shaped relationship between the literacy rate and tax revenue.

Fiscal decentralization is measured by to what degree the central Government delegates the power of revenue collection and expenditure to the lower tiers of the Government, like provincial Government and local Governments. Pakistan is a federally administrated country and until the 18th amendment, all the powers regarding the revenue and expenditure were with the federal Government but after the 18 amendment, the power of expenditure has transferred to the provinces. The decentralization of expenditure and revenue would obviously increase the efficiency of the fiscal policy, tax revenue and benefits from the

expenditure. However, there were some pre-conditions to reap these benefits, which were the enforcement of free and fair accountability system, well-trained staff and ability to coup with international fluctuations in economy Sow and Fimahefa (2017).

Political instability is the common prevalence of the developing countries. The democratic Governments usually could not complete their constitutionally described time in the Government. The developing countries have the strong armies, which were involved in the politics. The political instability has invers impact on GDP, tax base and tax revenue. The political instability also has reduced the tax revenue and increased the expenditure on law and order, which would increase the fiscal deficit Salatin et al. (2017).

Many studies have explained the institutional determinants of revenue and tax buoyancy. The important studies are listed here.

Ghura (1998) explained that the increase in corruption would decrease the tax revenue. Bird et al. (2008) identified the major handles of the tax revenue, which were rule of law and corruption. The political system and democracy have a direct impact on the tax revenue and public expenditure (Kenny & Winer, 2006). Law and order, political instability and corruption were the major handles of tax revenue (Gupta, 2007). Friedman et al. (2000) stated the nexus between the institutional factors, tax base and tax revenue for OECD, Latin America and FSU countries. They concluded that low quality of institutions has caused a decrease in the tax base and tax revenue and tax to GDP ratio. Chaudhry and Munir (2010) found that thin tax base, illiteracy, foreign aid, Dependence on agriculture and GDP were the important handles of low tax revenue. Javed and Arif (2012) indicated that institutional factors such as bureaucratic quality, law and order and control of corruption had a significant and positive impact on tax revenue.

Garikai (2009), Ahmed and Muhammad (2010) and Bonga (2009) evaluated the handles of the tax revenue's buoyancy. They identified that buoyancy was inversely related to monetization and directly related to agriculture sector, industrial sector, fiscal deficit, public expenditure and external aid. Profeta et al. (2013) found that political variables have significant impact on the tax revenue and institutional variables have insignificant impact on tax revenue.

Sarwar and Ashfaq (2016) evaluated the major handles of the tax buoyancy for fifty developing countries. The analysis demonstrated that democracy has a positive and autocracy has negative impact on total tax revenue. Musa et al. (2016) quantitatively analysed the tax buoyancy of Nigeria. The results illustrated that National Income (GDP) and public expenditure has direct nexus, while grant, inflation rate and reforms have indirect nexus with tax revenue. Sharma and Kulsrestha (2015) evaluated the tax buoyancy for India. They inferred that in fiscal, general and economic services and aids have effective while dividends and social services have ineffective impact on tax revenue.

The literature concluded that some studies had quantified the institutional handles while few studies have explored the institutional handles of tax buoyancy for Pakistan. This study has quantified the nexus of institutional and social handles on tax buoyancy of Pakistan.

3.1. Variables of the Study:

The major objective of this study was to quantify the impact of major social and institutional determinants on the tax buoyancy.

$$SIBtax = f(Ur, Le\ Un, Edu, PS, FS, RL, GE, C)$$

SIB_{tax} is the tax buoyancy, which is the function of social and institutional determinants.

Tax Buoyancy (SIB_{tax})= F(Urbanization, Life Expectancy, Unemployment, Literacy Rate, Political Stability, Fiscal Decentralization, Government Effectiveness, Rule of Law, Corruption).

The mathematical and econometric representation of the Model-2 is as following:

$SIB_{tax} = \beta_{20} + \beta_{21}U_R + \beta_{22}L_E + \beta_{23}U_N + \beta_{24}Edu + \beta_{25}PS + \beta_{26}FD + \beta_{27}RL + \beta_{28}GE + \beta_{29}C + \mu_2$

Where SIB_{tax} is the buoyancy of the tax revenue of Pakistan, which is function of social and institutional determinants. In the equation U_R is the urbanization, L_E is life expectancy, U_N is unemployed population, Edu is the literacy rate, PS is the political stability, FD is the fiscal decentralization, RL is the rule of law, GE is the government effectiveness and C is corruption.

Table: 1 Social and institutional Determinants of Tax Revenue Buoyancy:

S No	Variable	Code	Nature	Sign	Measurement
01	Tax Buoyancy	SOB_{tax}	Dependent		Calculated in step-1
02	Urbanization	U_R	Independent	Positive	Proportion of Population
03	Life Expectancy	L_E	Independent	Negative/ Positive	Average Life of Population
04	Unemployment	U_N	Independent	Negative	Percentage of Labour Force
05	Literacy Rate	Edu	Independent	Positive	Enrolment at HSSC level
06	Political stability	PS	Independent	Positive	World Governance Indicators
07	Fiscal Decentralization	FD	Independent	Positive	Zero before 18^{th} amendment and 1 after 18^{th} amendment
08	Corruption	CC	Independent	Negative	World Governance Indicators (WGI)
09	Government Effectiveness	GE	Independent	Positive	WGI
10	Rule of Law	RL	Independent	Positive	WGI

3.2. Analysis of the Tax Revenue's Buoyancy.

The analysis of this research was done in two steps, in first step this research has estimated the tax revenue's buoyancy and in second step has quantified the impact of social and institutional handles tax buoyancy. The tax buoyancy was calculated by using Co-integration Approach. This method was appropriate because the tax, tax base, public expenditure and GDP data have followed all the rules of co-integration. For co-integration all variables must have unit root at level but stationary at first deference *I* (1). Furthermore, the Engel Granger Test has also verified the co-integrated relationship. The tax buoyancy was calculated in

further two steps, first was the tax to base buoyancy and second was tax base to GDP buoyancy. The tax revenue buoyancy was then calculated by multiplying the tax revenue to tax base buoyancy and tax base to GDP buoyancy.

Haughton, (1998), defined buoyancy as:

Tax revenue to tax base buoyancy step 1:

$\text{LogTTR} = \beta o + \beta 1 \text{logBase} + \mu$Twerefou et al. (2010).

Where TTR is the Tax Revenue and β_1 is the buoyancy of tax revenue to tax base, Base is from where Tax Revenue is collected and μ was the random error.

Tax Base to GDP buoyancy step 2:

$$\text{logBase} = bo + b1\text{logGDP} + €$$

Where b_1 is the buoyancy of tax base to GDP and € is the random error. Now tax revenue buoyancy is calculated by multiplying the tax revenue to tax base buoyancy (β_1) and tax base to GDP buoyancy, (b_1).

$$\boldsymbol{Buoyancy\ of\ Tax\ Revenue} = \beta 1 \times b1$$

The second step of this research study has quantified the impact of social and institutional handles on the tax buoyancy. This study is initiated as previous studies could not comprehensively analyse the determinants of tax revenue's buoyancy. In second step this study quantifies the impact of social and institutional handles of the tax buoyancy through ARDL Co-integration. When the variables are integrated of different order, some variables are integrated *I* (0) and other integrated *I* (1), then Autoregressive Distributive Lag model (ARDL) is appropriate technique to analyse the data. In this research dependent variable is *I* (0) and independent variables are integrated of mixed order, some are integrated at level *I* (0) and some at first difference *I* (1). The existence of ARDL type co-integration is further verified by using ARDL bound test. The lag length or order of the ARDL is determined by using various criteria like SBC and AIC.

3.3 Data Sources:

This research study used the TSD from 1991 to 2021 for the period of 30 years.

The data was retrieved from the following sources:

i. World Bank Data, www.worlkbank.org.
ii. World Governance Indicators, http://info.worldbank.org/governance/wgi/.

4. Data Analysis and Interpretation

This section included the analysis of impact of the social and institutional variables on the tax buoyancy in Pakistan. The section consisted of ADF test of the variables, bound test, lag order selection test, ARDL analysis, ECM analysis and different diagnostic.

4.1. Augmented Dickey Fuller Test:

The ADF test revealed that variables were integrated of different order, some variables were integrated at level *I* (0) and some variables were integrated at first difference, *I* (1). The tax buoyancy, life expectancy, corruption and fiscal decentralization were integrated at level, *I* (0). While other variables were non-stationary at level and stationary at first difference, *I* (1). These results paved the way for the possible existence of Autoregressive Distributive Lag Model (ARDL) type of co-integration.

Table: 2 Results of ADF Tests.

S No	Name	ADF	Test value	Critical Values	Results
01	Total Tax Buoyancy	Level	-4.625	-3.622	***I* (0)**
		1st difference	----------	----------	
02	Urbanization	Level	-2.378	-3.568	***I* (1)**
		1st difference	-7.637	-3.574	
03	Unemployment	Level	-1.332	-3.568	***I* (1)**
		1st difference	-5.039	-3.574	
04	Literacy Rate	Level	-3.235	-3.568	**I (1)**
		1st difference	-6.197	-3.580	
05	Life Expectancy	Level	-3.722	-3.587	***I* (0)**
		1st difference	----------	----------	
06	Rule of Law	Level	-1.236	-3.587	***I* (1)**
		1st difference	-5.538	-3.580	
07	Political Stability	Level	0.759	-3.568	***I* (0)**
		1st difference	-3.654	-3.574	
08	Government Effectiveness	Level	-2.136	-3.574	**I (1)**
		1st difference	-3.230	-1.952	
09	Corruption	Level	-3.298	-3.568	***I* (0)**
		1st difference	-5.531	-3.574	
10	Fiscal Decentralization	Level	-2.081	-3.568	***I* (0)**
		1st difference	-5.309	-3.574	

4.2. F-Bound Test.

Table: 3 Results of F-Bound Test of Co-Integration.

Test Statistics	Statistics value	Level of Significance	L-Bound	Upper Bound	Results
F-statistics	14.2014	5 %	2.04	2.08	ARDL Co-integration Exists

Source: Author's own Estimation

The results revealed that the value of F-statistics was 14.20 while the critical value for upper bound was 2.08 and lower bound value was 2.04. The F-statistic value was greater than upper bound and result confirmed the existence of ARDL co-integration.

4.3. Testing the Order of the ARDL:

This study employed the Akaike information Criteria (AIC) and graphical technique. The AIC criteria has identified that the optimal lags for the ARDL lag length were 1 and zero, while the order of ARDL model was ARDL (1,0,0,0,0,0,0,0,1,1,0).

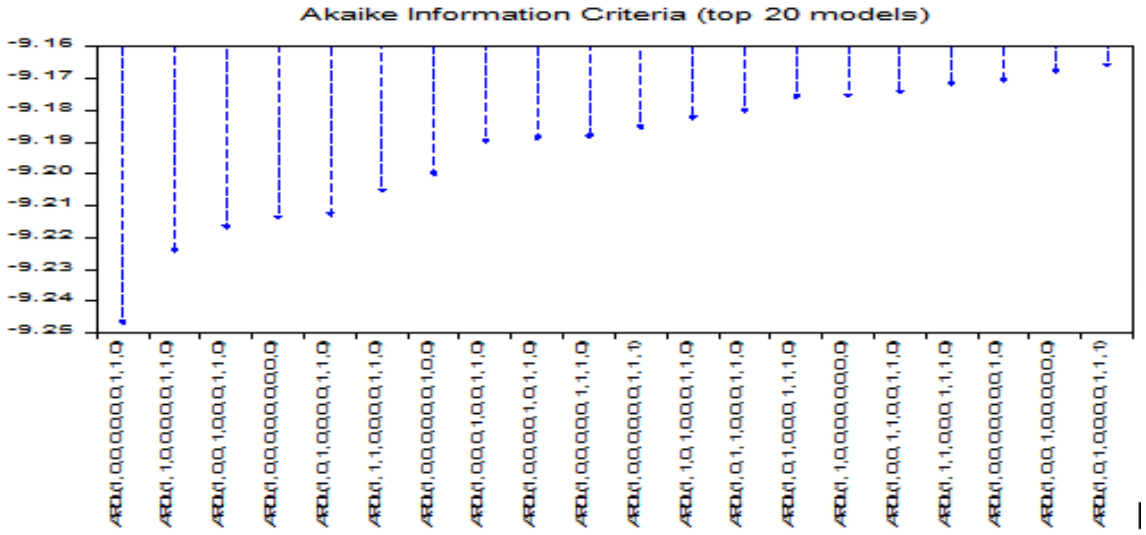

Figure: 1 Results of Akaike Information Criteria of Lag Selection.

4.4. Long Run Coefficients:

Table: 4. Results of long Run ARDL Co-Integration.

S No	Variable	Coefficients	P-Value	Remarks
01	Tax Buoyancy (-1)	0.3309	0.0295	
02	Unemployment	-0.0005	0.1865	
03	Urbanization	-0.0126	0.0883	
04	Literacy Rate	0.0008	0.1038	
05	Life Expectancy	0.0212	0.0112	
06	Rule of Law	0.0208	0.0013	
07	Political Stability	0.0036	0.2896	
08	Government Effectiveness	-0.0073	0.4566	
09	Government Effectiveness (-	0.017715	0.1244	
10	Corruption	-0.0156	0.0188	
11	Corruption (-1)	-0.0105	0.1712	
12	Fiscal Decentralization	0.0004	0.8864	
13	Constant	-0.2742	0.1548	

Source: Author's own Estimation

The tax buoyancy (-1) in lagged time has positive impact on the tax buoyancy. The value of its coefficient was 0.3309, one percent increase in the tax buoyancy (-1) would increase the tax buoyancy by 0.33.

Unemployment has an inverse impact on the tax buoyancy. This study affirmed the Okun law. The coefficient of unemployment was -0.0005, which showed that a one percent increase in unemployment would decrease the tax buoyancy by -0.0005.

Urbanization also has negative impact on the tax buoyancy. It contradicted the (Kenny & Winer, 2006; Aizenman & Jinjarak, 2008; Chilima, 2005). The coefficient of urbanization was -0.0126, stated that one percent increase in urbanization as proportion to total population would decrease the tax buoyancy by 0.0126. The basics behind this contradictory relationship was that in Pakistan urbanization could not convert the informal sector into formal, as majority of urban center were still undocumented and informal.

Literacy rate has a positive impact on the tax buoyancy. The results validated the theory of reasoned action (TRA) and theory of planned behavior. The theories explained as increased literacy rate would increase the literacy about the appropriate tax attitude which would increase the responsibility of tax payment, tax knowledge and tax liability which in turn would enhance the tax compliance and tax revenue mobilization.

Life expectancy has a positive and significant impact on the tax buoyancy. The coefficient was 0.0212, which stated that one-year increase in the life expectancy would increase the tax buoyancy by 0.0212. The results contradicted the conclusions of the studies of the Fehr et al. (2008), Nuță and Nuță (2020) and Kudrna et al. (2014). Where they stated that increased ageing would decrease the LFPR, employment level, and tax revenue. The results confirmed the conclusions of (Barro & Sala-i-Martin, 1992 or Acemoglu & Johnson, 2007) where they stated positive effects of health on economic growth introduced health as a major source of income growth via its role in accumulating of human capital and as a central variable in growth model.

Rule of law has a direct effect on the tax buoyancy. The coefficient was 0.0208, which stated that a one-percent increase in the rule of law would increase the tax buoyancy by 0.0208. The affirmed the results of Bird et al. (2008) and Gupta (2007). Improved rule of law would attract the investment and foreign direct investment, which would promote GDP, tax base and tax revenue.

The coefficient of political stability was 0.0036, which stated that one-percent increase in the political stability would increase the tax buoyancy by 0.0036. The results affirmed the results of Salatin et al. (2017). Political instability badly effects the long run economic growth and employment in any country, which reduces the GDP and tax base and eventually reduces the tax revenue. Political stability would provide a conducive environment for investment and employment, which would increase the GDP and tax base. The increased tax base would increase the tax revenue and tax buoyancy.

The fiscal decentralization has a positive impact on the tax buoyancy. The coefficient of the FD was 0.0004, which stated that a change from centralized to decentralized fiscal system would increase the tax revenue and tax buoyancy. The results confirmed the theory where the FD has increased the control on revenue collection and expenditure, which would increase the efficiency of the fiscal system, tax revenue and tax buoyancy, with precondition of enforcement of free and fair accountability system, well-trained staff and ability to coup with international fluctuations in economy, Sow and Fimahefa (2017).

Control of Corruption has an inverse and negative impact on the tax buoyancy. The corruption in current as well as in lagged form has an inverse impact on the tax buoyancy. The result validated the conclusion of Ghura (1998), Kenny and Winer (2006), Gupta (2007), Friedman et al. (2000). The Government effectiveness (GE) has an inverse impact in current time and positive impact in lagged time. The coefficient of the GE (-1) was 0.0177, which stated that a one percent increase in the GE would increase the tax buoyancy by 0.0177. The empirical results revealed that the nexus among the GE and tax revenue was of lagged nature. The GE take at least one year to be effective. Law and order, political instability and corruption were the major handles of tax revenue (Gupta, 2007). Friedman et al. (2000) stated that the low quality of institutions caused a decrease in the tax base and tax revenue and tax to GDP ratio. Javed and Arif (2012) **inferred that** bureaucracy, law and order and corruption had a direct impact on tax revenue.

4.5. Diagnostic Tests of Long Run ARDL Model:

Diagnostics tests results are as followings:

Table: 5. Diagnostic Tests of Long Run ARDL of Social and Institutional Determinants

S NO	Test Type	Null Hypothesis	Test Statistics	Critical Values	P-Values	Results
01	R-Squared		0.9978			Best Fit Model
02	F-Test	Model is overall insignificant	665.4112		0.0000	Model is overall significant
03	Breusch-Pagan-Godfrey	No Hetroscedasticity	2.8072		0.9968	No Hetroscedasticity
04	Breusch-Godfrey	No Autocorrelation	5.5640		0.0619	No Autocorrelation
05	Wald Test	All coefficients are Zero	633049.2		0.0000	Null Hypothesis is Rejected

Source: Author's own Estimation

The R^2 revealed that 99 percent of variations in the tax buoyancy were explained. The F-statistic revealed that model was overall significant. BPG and BG tests stated that there were no hetroscedasticity and autocorrelation. The Wald test stated that the model was jointly significant.

4.6. Jarque-Bera Test of Normality:

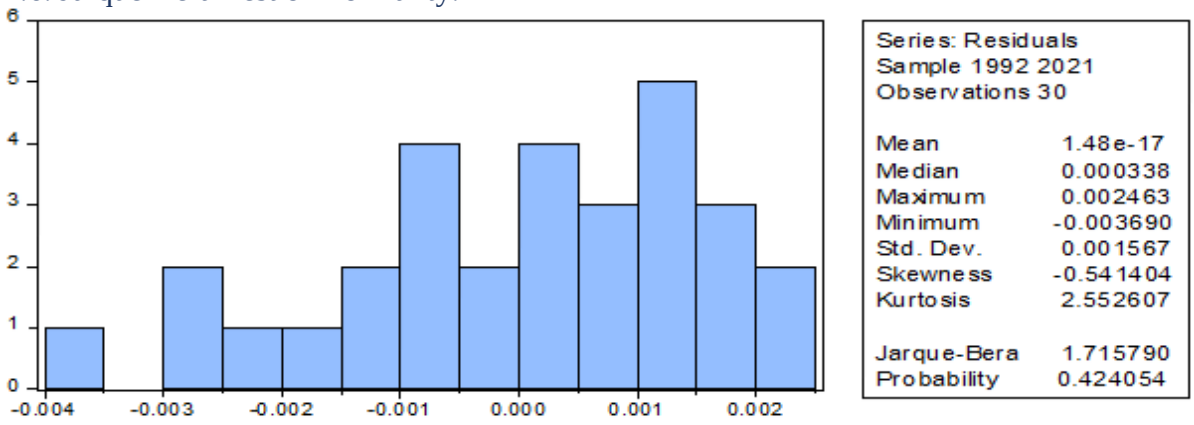

Figure: 2 Jarque-Bera Test of Normality

The value of JB statistics was 1.7157 and its p-value was 0.424054, which stated that null hypothesis of residual normality could not be rejected, and residual were normally distributed and the model was correctly specified.

4.7. CUSUM Test of Structural Stability:

The CUSUM test explained that blue line was inside the red lines so the model was stable.

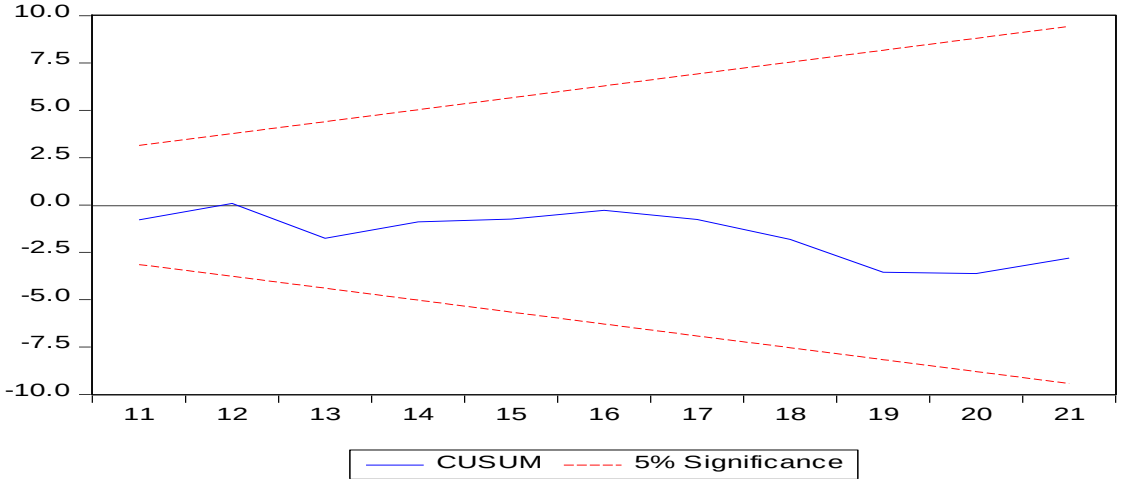

Figure: 3 CUSUM Test:

4.8. Short Run Coefficients:

Table: 6. Short Run Coefficients of Social and Institutional Handles of Tax Revenues Buoyancy

In the short run unemployment, urbanization, Govt effectiveness and corruption have negative impact on the tax buoyancy. While literacy rate, life expectancy, rule of law, fiscal decentralization and political stability have positive impact on the tax buoyancy. The ECM stated that nexus of tax buoyancy and its social and institutional handles was dynamic any deviation from equilibrium path would be automatically corrected towards its equilibrium path in the period of one year.

S No	Variable	Coefficients	P-Value	Remarks
01	Unemployment	-0.0004	0.2310	
02	Urbanization	-0.0111	0.1219	
03	Literacy Rate	2.71E-06	0.3502	
04	Life Expectancy	0.0255	0.0655	
05	Rule of Law	0.0182	0.0294	
06	Political Stability	0.0006	0.8408	
07	Government Effectiveness	-1.77E-05	0.9982	
08	Control of Corruption	-0.0106	0.0299	
09	Fiscal Decentralization	0.0024	0.3861	
10	C	-0.0001	0.9656	
11	Error Correction	-0.9762	0.0040	

Source: Author's own Estimation

4.9. Diagnostic Tests of Short Run:

Table: 7 Diagnostic Tests of Short Run:

S NO	Test Type	Null Hypothesis	Test Statistics	Critical Values	P-Values	Results
01	R-Squared		0.6549			Good Fit Model
02	F-Test	Model is overall insignificant	3.416		0.0113	Model is overall significant
03	Breusch-Pagan-Godfrey	No Hetroscedasticity	3.1323		0.9781	No Hetroscedasticity
04	Breusch-Godfrey	No Autocorrelation	5.7108		0.0575	No Autocorrelation
05	Wald Test	All coefficients are Zero	13.5275		0.0000	Null Hypothesis is Rejected

The R-square stated that about 65 percent of the variation were explained. The F test co firmed that the model was overall significant. BPG and BG test verified the non-existence of Autocorrelation and hetroscedasticty.

4.10. Jarque-Bera Test of Normality:

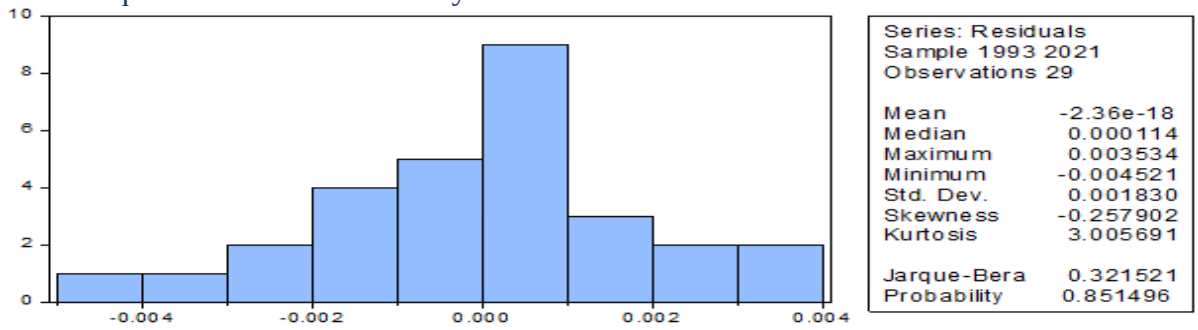

Figure: 4 JB Test.

The value of JB statistics confirmed that residuals were normally distributed and the model was correctly specified.

4.11. CUSUM Test of Structural Stability:

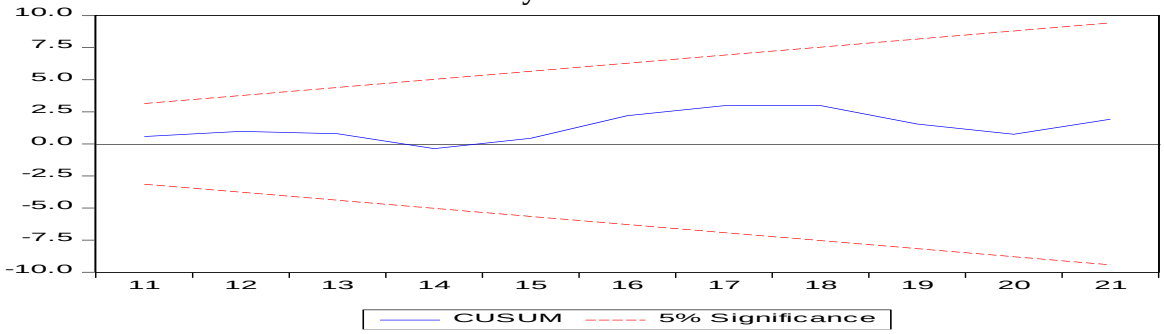

Figure: 5 CUSUM Test:

The CUSUM test explained that blue line was inside the red lines and model was stable.

5. Conclusion and Recommendations

This research intended to explore the effect of social and institutional handles on tax buoyancy in Pakistan. Moreover, this study also intended to estimate the tax revenue buoyancy. Major social and institutional determinants of tax buoyancy were unemployment, urbanization, literacy rate, life expectancy, rule of law, political stability, Government effectiveness, corruption, and fiscal decentralization.

The study employed the TSD data from 1991 to 2021. The analysis of data was done in two parts; the first part was used to estimate the tax buoyancy. In the first step this study used ADF to test the stationarity. All the variables were non-stationary at level but stationary at the first difference, *I* (1). This study further employed the EGT test to confirm the existence of co-integration in bi-variate models. Eventually, the study employed the EG type of co-integration to calculate the tax and expenditure's buoyancy.

While in the second step, this research has analysed the effects of social and institutional handles on tax buoyancy. This study has employed bound test for the confirmation of the existence of ARD type of co-integration. The bound test has confirmed the ARDL co-integration. ARDL co-integration was used for long run while ECM was used for short run analysis. The results of the different models were concluded as followings:

The tax buoyancy (-1) has a positive impact on the tax buoyancy. An increase in unemployment would reduce the GDP and tax base, which in turn decreases the tax revenue and tax buoyancy Okun (1962). The coefficient of unemployment was -0.000547. Urbanization also has a negative impact on tax buoyancy. It has contradicted the economic theory that urbanization could make it easy to collect tax revenue, reduce the cost of tax collection and increase tax buoyancy. It contradicted (Kenny & Winer, 2006), (Aizenman & Jinjarak, 2008) and (Chilima, 2005). The literacy rate has a positive impact on tax buoyancy. The results have validated the Reasoned Action (TRA) and Planned Behavior (TPB), suggested that attitude was tax payers determined by intentions to pay taxes and this intention form their attitude toward taxpaying (Fishbein & Ajzen, 1975), Ajzen (1991).

Life expectancy has a positive impact on tax buoyancy. The results have contradicted the conclusions of Fehr et al. (2008) and Kudrna et al. (2014) where they stated that increased ageing population would decrease the LFPR, employment level and tax revenue. The Rule of Law and Political Stability have direct effect on tax buoyancy. The results have verified the theoretical nexus of the Rule of Law and tax buoyancy and affirmed the results of Bird et al. (2008) and Gupta (2007). The coefficient of Political Stability was 0.003689. The results were also according to the theoretical nexus and affirmed the results of Salatin et al. (2017).

Fiscal Decentralization (FD) has a positive impact on tax buoyancy, which has stated that a transition from a centralized to a decentralized fiscal system would increase tax revenue and its buoyancy. FD would increase the control on revenue and expenditure, which would increase the efficiency of the fiscal system, tax revenue and its buoyancy. The corruption in current as well as in lagged form has inverse impact on the tax buoyancy. The result has verified all previous results of Ghura (1998) and Kenny and Winer (2006).

Government effectiveness (GE) has an inverse impact in current time and a positive impact in lagged time. It has negated in current time the conclusion of Javed and Arif (2012) which indicated that institutional factors such as bureaucratic quality had a positive impact on tax revenue. The results revealed that Govt effectiveness take time to be implemented.

Considering the statistical results of the research following recommendations are made to improve the tax buoyancy and revenue.

An increase in unemployment will reduce the GDP, tax base, tax revenue and tax buoyancy. The Government should take steps to eradicate unemployment by attracting FDI, take measures to improve the skills, initiate labor-intensive projects, take measures to reduce occupational and geographical immobility, lower the tax rate on business and encourage the entrepreneurship.

The institutional factors Rule of Law has a direct effect on tax buoyancy. This study suggested that a measure to improve the rule of law. The Government should enable a fair and consistent application of the law, should create a transparent and accountable legal system and support an independent judiciary. This study also suggested that Govt should take measures to reduce political instability, should avoid political victimization, should go for an economic grand dialogue to provide a stable political situation and should conduct the free and fair election within the stipulated time.

Fiscal decentralization (FD) has a positive impact on tax buoyancy. This study suggested that the Government of Pakistan should make an effective local body and community system to create efficiency in revenue collection and expenditure.

Corruption has indirect impact on tax buoyancy. This study suggested that Govt should work on the Devolution of Power, good governance, documentation, restructure the tax system, privatization of public units and reforms in the civil services.

Government effectiveness (GE) has an inverse impact in the current time and a positive impact in the lagged time. The phenomenon indicated that the Government's efforts to bring institutional effectiveness miserably failed to create Government effectiveness.

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