

# Role of Fiscal Policy in the Economic Welfare: A Case Study of Pakistan

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## Abstract

*This research paper intends to look at the significance of the government expenditures in various sectors, investment by the private sector, and current account conditions on the well-being of the citizens in Pakistan over the duration of 1972-2021, making use of the Autoregressive Distributed Lag (ARDL) structure. This study additionally checks out disaggregated levels of government spending, with a particular concentration on the social sector (health and health as well as additional education), economic services, subsidies, as well as the maintenance of law and order. The research concern settled in this study is: Do the public sector's economic actions improve the financial condition of the society through the increase in per capita income and employment opportunities, or do they trigger misallocation of public sources as well as injury to eco wellbeing of the society? The study also analyzes the impact of changes in the structure of the federal government's investment in time in addition to determining quick- and durable outcomes for crucial macroeconomic variables. The empirical results reveal that all parts of federal government expenses have considerable long-run organizations with per capita income, a certain welfare variable, besides spending on law and order, which has an unfavorable, nonetheless statistically insignificant impact. In terms of job opportunities, the federal government's expenses on education and learning have a considerable long-term favorable impact on employment. Nonetheless, expenditures on health have a significant unfavorable impact on employment. Different various other parts of federal government expenses did not substantially support employment. This study supplies valuable insights into the relationship between federal government costs and well-being in Pakistan. The browsing may give some requirements for focusing on the allowance of development in addition to the non-development budget to improve the welfare of Pakistani people.*

**Keywords:** Fiscal Policy; Economic Growth, Welfare, ARDL

## Introduction

Governments must safeguard the wellbeing and well-being of their residents, as well as the rising need for government involvement in financial and social matters because of the rare existence of Pareto optimality. To fulfill this responsibility, there is a continual rise in fiscal spending on one side, as well as a decrease in federal government income, which develops deficit spending. According to macroeconomic literary works, deficit spending is expansionary to the economic climate, as it boosts welfare as well as growth. Nevertheless, the suggestion that even more government spending can promote development is controversial. When taking into consideration appropriate policy actions to promote growth, policymakers are often curious about need

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management plans and also supply-side policies. Demand management policies concentrate on the management of money supply and federal government expenditures. Managing the money supply affects the level of liquidity in the financial market, which in turn modifies private spending. An adjustment in federal government costs directly affects accumulated needs, i.e., private consumption and private investment, as well as the external sector of the economy, all of which directly or indirectly impact individuals' welfare. An additional viewpoint recommends that big fiscal spending financed by taxation misshapes economic effectiveness as well as growth through disincentives to work and investment discourages effective source allowance, and surpasses the expense of regulation for tax collection, which also hurts the economic system. Severe variations of economic experts in literary works appoint an essential duty to the government in the economy's growth, specifically in solving conflicts between private as well as social passions.

Loizides and Vamvoukas (2005) checked out the relationship between the dimension of the public market and real per capita income, making use of the advancements in the concept of co-integrated processes. They followed the procedure generally utilized by other scholars, which relates government investing to Gross National Product (GNP). Nonetheless, there is a variant in the sorts of public expenses that ought to be associated with GNP, and whether deflated or un-deflated information needs to be used. Some researchers, such as Komain (2007), showed that accumulated federal government expenditures create financial growth, but economic development does not create government expenses to expand.

In the case of Pakistan, there have been few research studies conducted on the impact of federal government spending on the welfare of individuals and work, especially on the disaggregated elements of federal government expenditure. Most of the research concentrates on the effect of government costs and financial development (Ashghar & Zahra, 2012; Asghar et al., 2012; Akram & Khan, 2007; Hussain et al., 2003; Aurangzeb, 2003). The main purpose of this study is to discover if public expenditure boosts the well-being of ordinary residents in the economic climate. The function of this research study is to empirically figure out the effect of various parts of federal government expenditure, such as education, health, financial solutions, aids, as well as law and order, on the economic wellness of people, such as revenue per capita and employment levels.

The structure of the paper is as follows: area 2 provides a detailed evaluation of appropriate literature. Area 3 defines the information and econometric method, which is followed by the estimation and discussion of the cause in section 4. The paper ends with a recap and final statements in section 5.

## Literature Review

Economic literature has widely debated the importance of fiscal policy in achieving economic growth and economic welfare. In particular, the influence of fiscal spending on the welfare of the economy has been extensively studied in various countries, including Pakistan. The purpose of this literature review is to examine the existing evidence of fiscal expenditures in the welfare of Pakistan's economy.

Numerous empirical studies have tried to discover the partnership between federal government expense and economic well-being in both developed and developing countries. These studies, using various concepts to specify the model as well as various research study approaches, have found that the effect of federal government expenditure on economic growth can be either adverse or favorable, consistent with the two different approaches to federal government expenditure on economic development described in economic concepts. Yasin (2000) checked out the relationship between government costs and economic growth in 26 sub-Saharan African nations based upon a

neoclassical production function for the same area. Making use of panel information from the 1987 to 1997 period as well as utilizing both fixed-effect as well as random-effect strategies, he located a different result, suggesting that federal government spending on funding formation has a favorable and considerable impact on financial development as well as creates a desirable economic environment. Tang (2001) used Johansen's multivariate co-integration tests on Malaysian information and found no co-integration between national earnings and government expenditure. Nonetheless, a short-run origin from nationwide earnings to government expense was observed, supporting Wagner's regulation throughout the study duration of 1960-1998. In one more research, Tang (2009) stated that government investment in education and defense is co-integrated with national earnings, respectively, while this is not the case for federal government costs on wellness. A uni-directional origin pattern is recognized from national income to government spending on education and learning, defense, and health. In literature, it is concluded that the effect of government costs on financial growth can be positive or unfavorable, meaning it can either sustain the Keynesian hypothesis or Wagner's regulation. Alexiou (2009) utilized a comparable econometric strategy and analyzed the impact of different variables on economic development for seven countries in the Southeastern Europe area spanning from 1995 to 2005. The outcomes suggest that out of the five variables made use of in the evaluation, federal government spending on funding formation, development support, exclusive financial investment, and a proxy for professional visibility all have a favorable and considerable effect on economic growth. In contrast, population growth had no impact on financial development. Nurudeen and Usman (2010) empirically determined the partnership between government expenditure and economic development in Nigeria, and they created a design based on the Keynesian and endogenous development designs. They found that overall capital investment, complete recurring expenditure, and government expense on education injured financial growth. On the other hand, a rise in federal government expenditure on transport and communication leads to a boost in economic growth. Their empirical results recommended that the connection between government costs and growth can vary dramatically over time. They conclude that public costs contributed ideally a small percentage to economic growth. Wahab (2011) examined the results of aggregate and disaggregate federal government spending on economic growth by using a worldwide sample of 97 established as well as created countries between 1960 and 2004. For the evaluation of disaggregated government costs, he utilized information from 1980 to 2000 for 32 countries. Utilizing both symmetric and uneven version specifications, he found that aggregate federal government costs have positive results on result development, especially throughout periods of below-trend development. Additionally, he found that federal government usage costs have no considerable effects on result growth. Yet, government financial investment spending has favorable results on output development, specifically when its growth drops below its fad development. Nevertheless, this favorable impact transforms into adverse when federal government financial investment spending development surpasses its pattern development. In additional research, Butkiewicz and Yanikkaya (2011) found conflicting results that showed that complete expenses have adverse effects on growth, yet usage expenditures hurt development in establishing nations. In addition, they argue that because of the inadequate governments that create nations that dissuade private financial investment, public financial investment becomes a substitute for exclusive financial investment. They suggest that countries ought to restrict their federal governments' intake costs and purchase frameworks to promote growth. Wu et al. (2010), in their empirical research study, highly supported Wagner's regulation as well as suggested that government costs are effective for financial development no matter the dimension of the federal government. Magazzino (2012) also

found a positive nexus between disaggregated fiscal spending and GDP in the Euro Area. In 2014, Alshahrani and Alsadiq carried out a research study on the influence of various types of federal government expenditure on financial development in Saudi Arabia. They checked out the short-term and lasting effects of expenses on development, making use of a Vector Mistake Improvement Design (VECM) as well as time-series information from 1969 to 2010. Their results showed that exclusive residential and public financial investments, as well as healthcare expenses, have a favorable result on long-term growth. Furthermore, their findings indicated that openness to trade and costs in the real estate market enhances short-term production. Park and Kim (2019) used panel data to examine the impact of fiscal policy on economic growth in advanced economies. They found that fiscal policy has a positive and significant impact on economic growth in advanced economies. Onifade et al. (2020) found a significant impact of government spending indicators on economic growth in Nigeria. Wahyudi (2020) found that government spending had a positive effect on economic growth in Indonesia. Wu and Zhang (2021) used panel data to examine the impact of government spending on economic growth in transition economies. They found that government spending has a positive and significant impact on economic growth in transition economies. Ahn and Kim (2021) examined the impact of government spending on economic growth in Asia. They found that government spending has a positive and significant impact on economic growth in Asia. Chen and Lee (2021) used a simple regression model to examine the impact of fiscal policy on economic growth in emerging economies. They found that fiscal policy has a positive and significant impact on economic growth in emerging economies. Lai and Liu (2022) used panel data to examine the impact of government spending on economic growth in developing economies. They found that government spending has a positive and significant impact on economic growth in developing economies. Shkodra et al. (2022) and Kirikkaleli and Ozbaser (2022) have found a positive relationship between government spending and economic growth in the US and Europe, respectively. Eugene (2023) proved that government spending is growing the South African economy.

To advertise education, it is vital to allot sufficient funds to the market since, with this, the objective of education and learning for all can be attained (Hussain et al. 2003). Aurangzeb (2003) found a positive relationship between GDP and health and wellness expenses in both the short-run and future and recommended that lower-income teams be helped. Akram and Khan (2007) identified inequalities in source allowance and solution arrangements in public health investing, particularly in rural areas, for government-provided health facilities. Asghar et al. (2011) found a favorable effect of public expenditure in social fields on economic growth and that public expense also creates a favorable impact on personnel and economic growth. Ashghar and Zahra (2012) stated that a major benefit of public investing in main and additional education is that it helps lower-income groups escape the poverty trap by offering fundamental education that allows them to get the needed skills to go into the workforce. Asghar et al. (2012) suggested that public expenses on health and wellness and education and learning in backwoods can lower poverty. A comparable research study by Attari and Javed (2013) checked out the connection between the price of rising cost of living, financial development, and federal government expenses among the creating nations in Asia and Pakistan. They used disaggregated federal government expenditure, dividing it right into existing expenditure and advancement expense between 1980 and 2010. They also discovered that the coefficient of present expense was statistically trivial, but the coefficient of development expenditure was statistically substantial. The results recommend that federal government expenditures have favorable surfaces and links.

Nevertheless, they said that many issues faced by the federal government in establishing countries, such as the usage and misallocation of sources, can cause too much capital investment to become unproductive at the margin if government expenditures are used over. Asghar et al. (2012) likewise found that government expenditure on infrastructure, country development, and social safety nets offers job opportunities for unskilled workers in the backwoods, which eventually lowers inequality between rural and metropolitan locations. Zeeshan and Ahmed (2014) also examined the favorable web link between healthcare spending and financial growth. In a study by Ali and Haider (2019), they analyzed the effect of government spending on the welfare of the economy by considering different components of government spending, such as infrastructure, education, and health. The study used time series data from 1980 to 2016 and found that government spending on infrastructure had a positive impact on the welfare of the economy while spending on education and health had a negative impact. Nasir and Shah (2021) used a vector error correction model (VECM) to examine the relationship between government spending and economic growth in Pakistan. They found a positive and significant impact on economic growth in both the short run and the long run. Ali and Khan (2021) analyzed the impact of government spending on employment in Pakistan. They found that government spending had a positive and significant impact on employment in the short run but insignificant in the long run. Kureshi, Ali, and Khattak (2021) used co-integration and error correction models to examine the impact of government spending on welfare in Pakistan. The study found that government spending had a positive impact on welfare in the long run, but its short-run effect was not significant. Rehman and Ahmed (2021) found that government spending on education and health had a positive impact on human development while spending on other sectors had no significant impact. Haider and Rashid (2021) examined the impact of government spending on poverty reduction in Pakistan. It was also found that government spending on social protection programs, such as health and education, had a significant positive impact on poverty reduction.

Ahmed and Iqbal (2022) used the Autoregressive Distributed Lag (ARDL) bounds testing approach to examine the impact of fiscal policy on economic growth in Pakistan. They found that government spending has a positive and significant impact on economic growth in Pakistan. Chaudhry and Rauf (2022) used panel data to examine the impact of public spending on poverty reduction in Pakistan. They found that public spending has a positive and significant impact on poverty reduction in Pakistan. Iqbal and Khan (2022) used the ARDL bounds testing approach to examine the impact of government spending on economic growth in Pakistan. They found that government spending has a positive and significant impact on economic growth in Pakistan. Nasir and Rauf (2022) used panel data to examine the impact of fiscal policy on poverty reduction in Pakistan. They found that fiscal policy has a positive and significant impact on poverty reduction in Pakistan. Raza and Iqbal (2022) used a simple regression model to examine the impact of public spending on economic growth in Pakistan. They found that public spending has a positive and significant impact on economic growth in Pakistan. Sattar, Karim, and Zafar (2022) used an autoregressive distributed lag (ARDL) model to examine the relationship between government spending and economic growth in Pakistan. The study found that government spending had a positive and significant impact on economic growth in the short run, but its impact, in the long run, was insignificant. Aslam and Zaman (2022) analyzed the impact of government spending on income inequality in Pakistan. The study used panel data from 1990 to 2017 and found that government spending on education and health had a positive impact on reducing income inequality, while infrastructure spending had a negative impact. The study concluded that the government should prioritize spending on education and health to promote income equality in the

country. Rauf and Qureshi (2022) found that government spending on infrastructure, education, and health had a positive and significant impact on economic development. The impact of government spending on economic development was stronger in the long run compared to the short run. Farooq and Akhtar (2022) found that government spending had a positive and significant impact on economic growth in the short run and the long run.

### Data and Econometric Methodology

This research is intended to check out the function of government in the well-being of society. To do this, the paper utilized the per capita income and employment rate of the economy as proxy variables for welfare. Yearly data from 1972 to 2021 was used to evaluate the influence of government sector expenditure when per capita income is taken as a proxy variable for welfare. The independent variables were expenditures on the health sector, education sector, provision of subsidies to various sectors and institutions, economic services, as well as law and order. All variables were in log kind. That is the first model. The 2nd model utilized quarterly data from 1972 to 2021 on employment rate, federal government expenditures on the health sector, education sector, provision of subsidies, financial services, law and order, private investment, and trade deficit. All information sets till 2005 were extracted from the Handbook of Statistics on Pakistan Economy 2005, and the remaining data were taken from WDI, IFS, and various issues of the Economic Survey of Pakistan.

#### Model 1

$$PC_t = \alpha_1 + \alpha_2 Health_t + \alpha_3 Edu_t + \alpha_4 LawOrder_t + \alpha_5 Eco Ser_t + \alpha_6 Subsidy_t + \varepsilon_t \quad (1)$$

#### Model 2

$$Emp_t = \beta_1 + \beta_2 Edu_t + \beta_3 Health_t + \beta_4 LawOrder_t + \beta_5 PI_t + \beta_6 TB_t + \varepsilon_t \quad (2)$$

Where:

PC = Per Capita Income

Edu = Government expenditure on education

Health = Government expenditure on health

Subsidy = Government spending as subsidy

Law and Order = government spending on law and order

Emp = Employment rate

PI = Private investment

TB = Current Account Deficit.

$\varepsilon_t$  = error term

The autoregressive distributed lag (ARDL) framework was used to evaluate the relationships and determine the direction of causality between variables. This approach was developed by Pesaran (1995, 1996, 1997) and Pesaran and Shin (1995) and it allows for testing without the need for pre-testing of variables and can be done with the current level of variables. The advantage of ARDL model is that it can be utilized without considering the order of integration; either variables stationary at level (0) or at first difference I (1) and it can take large numbers of lags in the data generating process. This study used ARDL because this model is capable to minimize mistakes and errors that might be occurs due to non-stationarity data series. To check the relationship between spending and the welfare of society this research analyzed data through different tests, such as regression, Unit Root test, ARDL, LM-test and stability tests.

ARDL approach to co-integration includes the conditional error correction version of the ARDL model:

$$\Delta \ln PC_t = \alpha_0 + \sum_{i=1}^p \kappa_i \Delta \ln PC_{t-i} + \sum_{i=0}^p \omega_i \Delta \ln Health_{t-i} + \sum_{i=1}^p l_i \Delta \ln Edu_{t-i} + \sum_{i=1}^p \psi_i \Delta \ln LO_{t-i} + \sum_{i=1}^p v_i \Delta \ln Eco Ser_{t-i} + \sum_{i=1}^p \tau_i \Delta \ln Subsidy_{t-i} + \zeta_1 \ln PC_{t-1} + \zeta_2 \ln Health_{t-1} + \zeta_3 \ln Edu_{t-1} + \zeta_4 \ln LO_{t-1} + \zeta_5 \ln Eco Ser_{t-1} + \zeta_6 \ln Subsidy_{t-1} + \xi_t \quad (3)$$

The  $\Delta$  represents the first difference and the optimal lag length is represented by  $p$ . The Bound Test is employed to test for the existence of a long-term relationship. If the F-statistics test value is greater than the critical value bounds, it is concluded that there is a long-term association between variables regardless of their order of integration.

Once a long-term relationship has been established, the following model is estimated.

$$\ln PC_t = \alpha_0 + \sum_{i=1}^p \kappa_{1i} \ln PC_{t-i} + \sum_{i=0}^p \omega_{1i} \Delta \ln Health_{t-i} + \sum_{i=1}^p l_{1i} \ln Edu_{t-i} + \sum_{i=1}^p \psi_{1i} \ln LO_{t-i} + \sum_{i=1}^p v_{1i} \ln Eco Ser_{t-i} + \sum_{i=1}^p \tau_{1i} \ln Subsidy_{t-i} + v_t \quad (4)$$

The ARDL specification for a short-term association is determined by using an error correction model in the following form:

$$\Delta \ln PC_t = \alpha_0 + \sum_{i=1}^p \kappa_{2i} \Delta \ln PC_{t-i} + \sum_{i=0}^p \omega_{2i} \Delta \ln Health_{t-i} + \sum_{i=1}^p l_{2i} \Delta \ln Edu_{t-i} + \sum_{i=1}^p \psi_{2i} \Delta \ln LO_{t-i} + \sum_{i=1}^p v_{2i} \Delta \ln Eco Ser_{t-i} + \sum_{i=1}^p \tau_{2i} \Delta \ln Subsidy_{t-i} + \varpi ECM_{t-1} + \epsilon_t \quad (5)$$

Where  $ECM_{t-1}$  is the error correction term, define as:

$$\varpi ECM_{t-1} = \ln PC_t - \alpha_0 - \sum_{i=1}^p \kappa_{2i} \Delta \ln PC_{t-i} - \sum_{i=0}^p \omega_{2i} \Delta \ln Health_{t-i} - \sum_{i=1}^p l_{2i} \Delta \ln Edu_{t-i} - \sum_{i=1}^p \psi_{2i} \Delta \ln LO_{t-i} - \sum_{i=1}^p v_{2i} \Delta \ln Eco Ser_{t-i} - \sum_{i=1}^p \tau_{2i} \Delta \ln Subsidy_{t-i} \quad (6)$$

All coefficients of the short-term equation represent the short-term convergence of the model toward the long-term equilibrium.  $\varpi$  represents the speed of adjustment.

## Estimation Discussion of Results

Firstly, used descriptive statistics to analyze the prime features of the data used in the study, the central tendency and dispersion of the distribution.

### Descriptive Statistics

The results of descriptive statistics are reported in table 1, which clarifies the fundamental features of the information and differentiates them from inferential statistics. The results show that the mean values of economic services and subsidies are higher than the typical, as well as the mean values of the staying variables are reduced but very near their median values. Just the coefficients of skewness are negative for per capita and education, showing that the log tail of the contour is towards the left. For the staying variables, health, economic service, subsidy, law and order skewness coefficients are positive which declared that their contours' log tails are in the direction of the right. All coefficient values of Kurtosis are less than 3, suggesting that they have an even more flat-topped (Platykurtic) circulation, just the health coefficient value of Kurtosis is more than 3, which is why it has a much less flat-topped (Leptokurtic) circulation. According to the JB examination data, the dataset is not typically dispersed.

**Table 1: Descriptive Statistics**

	PC	Health	Education	Eco Ser	Law Order	Subsidy
Mean	9.62	2.55	3.70	1.35	1.49	2.59
Median	9.66	2.79	3.89	0.86	1.71	1.86
Std.Dev	1.55	2.13	1.97	1.37	1.26	1.74
Skewness	-0.01	0.29	-0.13	0.58	0.13	0.53
Kurtosis	1.9	3.35	1.96	2.04	2.25	1.77
JB	2.36	0.92	2.27	4.45	1.24	5.16

### Stationarity Test

The unit root test is a prerequisite for a time series analysis. The results are presented in table 2, where it is observed that only the economic services expenditure is stationary at level, while the remaining variables are stationary at first difference. This implies that the variables have different levels of integration and in this situation ARDL is the best model to apply.

**Table 2: ADF Unit Root Test Results**

Variables	LPC	Health	Educ	Eco Ser	Law order	Subsidy
Order of Integration	I(1)	I(1)	I(1)	I(0)	I(1)	I(1)

The Dickey-Fuller ADF test was applied, and its results were analyzed. Subsequently, the Autoregressive Distributed Lag (ARDL) approach was employed. The application of the ARDL test involved several steps, with the first step being the selection of a model based on the lag criterion of the Akaike Information Criterion (AIC) and Schwarz Criterion (SC). A model with 4 lags was selected as it had the lowest AIC and SC values.

### Autocorrelation

The second step in the application of the ARDL test was to determine whether the series were serially correlated. The Breusch-Godfrey Serial Correlation LM test was applied for this purpose.  $H_0$ = There is no serial correlation;  $H_1$ = There is serial correlation

**Table 3: Serial Correlation LM Test**

F-stats	0.88	Prob. F	0.43
Obs. $R^2$	4.81	Prob. $\chi^2$	0.09

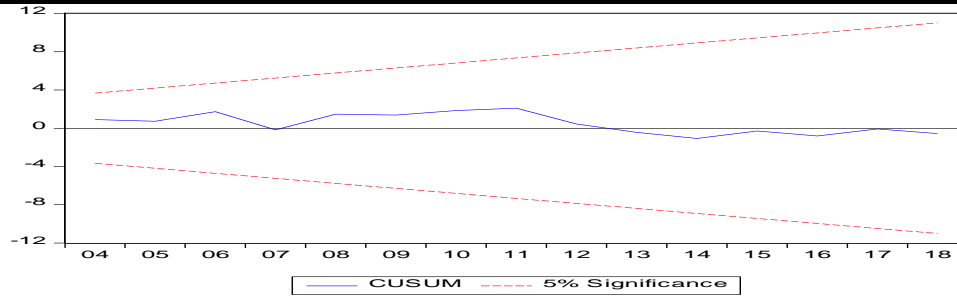
The F-statistic and Chi-Square probabilities were used to assess the presence of serial correlation. The resultant values of LM-test revealed that all variables are insignificant. As the significance values were more than 5% level of significance, the null hypothesis was accepted and alternative hypothesis was rejected, and it was concluded that there was no serial correlation. The F-statistic p-value was 0.43 which is quite greater than 0.05, that's proved the acceptance of  $H_0$ .

### Stability Test

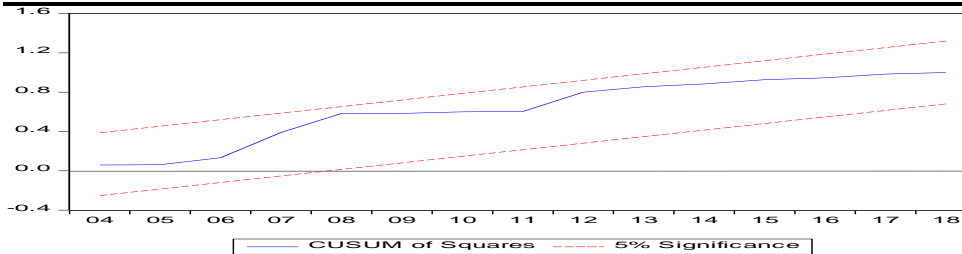
For finding the stability and instability of the variables in the model stability analysis is required. In the subsequent step, a stability diagnostic test was conducted, and the results of the CUSUM and CUSUM Square figures were analyzed. It was observed that all values were within the red lines or below the 5% level of significance, which confirms the stability of the model. It was evidently shown in both graphs that none of the lines crossed the critical values.



**Figure 1: Cusum analysis of model 1**



**Figure 2: Cusum Square analysis**



**Bound Testing**

To investigate the presence of a long-term relationship, this study applied the Bound test for coefficient diagnosis. The null hypothesis, stating that no long-term relationship exists, was tested. The calculated F-Statistics value was 4.46, which exceeded the upper bound critical value of 3.38 at a 5% significance level. Thus, the null hypothesis was rejected, supporting the existence of a long-term relationship.

**Table 4: Bound Test**

F-Statistics	4.46
Critical value 5%	3.38

Co-integration and Long-term Form: The co-integration coefficient value obtained was -0.34, and the probability was 0.00. For a long-term relationship to exist, the co-integration value must be negative, and the probability should be less than 5%. Based on these results, it was found that there is a long-term association of all variables with Per Capita income. The long-term co-integration equation is provided below: which showed that fiscal expenditure on education and subsidy have positive and significant impact on per capita income, but health expenditure has significant negative association with the per capita income. Expenditure on law and order has positive but insignificant impact and spending on economic service has negative but insignificant impact on per capita income.

$$PC = 7.64^* - 0.133^* \text{ Health} + 0.62^* \text{ Edu.} - 0.15 \text{ Eco. Ser.} + 0.16 \text{ Law Order} + 0.28^* \text{ Subsidy.}$$

**Models with Lags**

Results of suggested lag model are presented in table 5. Health expenditure after one lag has a positive impact on per capita income but in remaining lag percentage increase in health expenditure

by the government reduces per capita income from 0.4 percent to 2 percent. Current expenditure on education has a positive impact on per capita but in continuous 3 lags it negatively and significantly affects the per capita income from 9 percent to 38 percent. In the case of economic service and law and order both expenditures by the government are enhancing the per capita income of the society after one lag. On the other hand, increase in subsidies reduce capita income after 2 lags.

**Table 5: Co-integration Form**

Variables	Coefficient	Variables	Coefficient
PC(-1)	-0.177 C1		
Health	-0.02* C2	Law Order	0.03 C14
Health (-1)	0.016*C3	L&O (-1)	-0.1* C15
Health (-2)	-0.004 C4	L&O(-2)	0.44* C16
Health (-3)	-0.01* C5	L&O(-3)	0.38* C17
Edu	0.05 C6	Subsidy	0.064* C18
Edu (-1)	-0.35* C7	Subsid(-1)	-0.13* C19
Edu (-2)	-0.09 C8	Subsid(-2)	-0.04* C20
Edu (-3)	-0.36* C9		
Eco Ser.	0.01 C10		
Eco Ser (-1)	0.046*C11		
Eco Ser (-2)	0.05* C12		
Eco Ser (-3)	0.045*C13		

**Table 6: Wald Test**

Null Hypothesis	Test Stats	Value	Prob.
C(2)=C(3)=C(4)=C(5)=0	F-statistic	3.6	0.03
	Chi-square	14.4	0.00
C(6)=C(7)=C(8)=C(9)=0	F-statistic	5.6	0.07
	Chi-square	10.3	0.03
C(10)=C(11)=C(12)=C(13)=0	F-statistic	4.42	0.01
	Chi-square	17.7	0.00
C(14)=C(15)=C(16)=C(17)=0	F-statistic	2.14	0.12
	Chi-square	8.58	0.07
C(18)=C(19)=C(20)=0	F-statistic	4.16	0.02
	Chi-square	12.5	0.00

The results of the Wald test are presented in table 6. This study assessed whether the independent variables and their lags were jointly associated with the dependent variable in the long term. The results indicated that only the law-and-order variable and its lags are not associated with per capita income in the long term. The null hypothesis is accepted as all coefficients of the law-and-order variables are jointly zero. In contrast, the remaining variables such as health, education, economic service, and subsidy, and their lags are jointly associated with per capita income in the long term. The values of F-statistic and Chi-square and their  $p$  values are less than 0.05 for health, economic service and subsidy except the  $p$  value of F-statistic of spending on education is 0.07 showed less

than 10 percent level of significant although  $\rho$  value of Chi-square is less than 0.05 and statistically significant.

To examine the short-term relationship of this model, an error correction model was applied. The value of the error correction term (ECT) obtained was -0.14\*. This implies that the speed at which the model adjusts from short-term to long-term equilibrium is 14% in a year. In conclusion, this system is moving towards long-term equilibrium at a speed of 14% per year.

## Model 2

$$Emp_t = \beta_1 + \beta_2 Edu_t + \beta_3 Health_t + \beta_4 LawOrder_t + \beta_5 PI_t + \beta_6 TB_t + \varepsilon_t$$

The unit root test is a prerequisite for time series analysis. The results, presented in table 7, indicated that only employment data series is stationary at level, while the remaining variables' series such as government expenditure on health, education, law and order, private investment, and trade deficit are stationary at first difference. This suggests that the variables have different levels of integration.

**Table 7: ADF Unit Root Test Results**

Variables	Employ	Health	Educ	Law order	PI	TB
Order of Integration	I(0)	I(1)	I(1)	I(1)	I(1)	I(1)

After conducting the Dickey-Fuller ADF test and analyzing its results, it was determined that the Autoregressive Distributed Lag (ARDL) test approach was appropriate to use. It can analyze the model without considering the order of integration with numbers of lags. Following the procedure of the ARDL method, the first step involved selecting a model based on the lag criterion of the Akaike Information Criterion (AIC) and Schwarz Criterion (SC). A model with 4 fixed lags was selected as it had the lowest AIC and SC values. The second step was to determine whether the series were serially correlated. The Breusch-Godfrey Serial Correlation LM test was applied for this purpose.

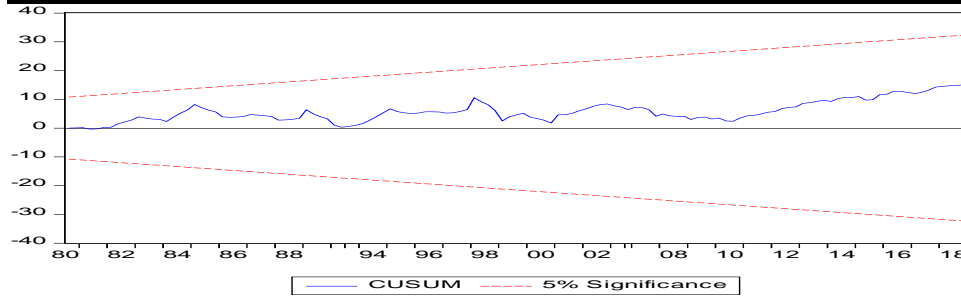
$H_0$ = There is no serial correlation;  $H_1$ = There is serial correlation

**Table 8: Serial Correlation LM Test**

F-stats	0.38	Prob. F	0.68
Obs. $R^2$	0.95	Prob. $\chi^2$	0.62

Result of LM-test is reported in table 8. The F-statistic and Chi-Square probabilities were used to assess the presence of serial correlation. As the probability values of F-statistics and Chi-square were 68% and 62% respectively, which were above the 5 % level of significance the null hypothesis was accepted and alternative hypothesis was rejected, and it was concluded that there was no serial correlation. In the subsequent step, a stability diagnostic test was conducted, and the results of the CUSUM figure 3 were analyzed. It was observed that all values were within the red critical lines or below the 5% level of significance, which confirms the stability of the model.

**Figure 3: Cusum analysis of model 2**



**Bound Testing**

To investigate the presence of a long-term relationship, this study applied the Bound test for coefficient diagnosis. The null hypothesis, stating that no long-term relationship exists, was tested as presented in table 9. The F-Statistics calculated was 7.85, which exceeded the upper bound critical value of 3.38 at a 5% significance level. Thus, the null hypothesis was rejected, supporting the existence of a long-term relationship.

**Table 9: Bound Test**

F-Statistics	7.85
Critical value 5%	3.38

Co-integration and Long-term Form: The co-integration coefficient value obtained was -0.06, and the probability value was 0.00. For a long-term relationship to exist, the co-integration value must be negative, and the probability should be less than 5%. Based on these results, it was found that there is a long-term association of all variables with employment. The long-term co-integration equation is provided below:

$$\text{Empolyment} = 4.16* -0.08*\text{Health} + 0.22*\text{Education} -0.03\text{law and order} -0.1278 \text{PI} -0.01 \text{TB}$$

The health expenditure of the government has a negative but significant impact on the employment level in Pakistan, health expenditure increased by one percent reduced the employment rate by 8 percent. In contrast, expenditure on education has a positive and significant effect on employment, expenditure on education increased employment by 22 percent. The remaining variables such as government expenditure on law and order, private investment, and trade deficit have a negative effect on employment, but none of these are statistically significant. This suggests that the government should focus on increasing expenditure on health and education to improve the employment level in the country.

**Table 10: Wald Test**

Variables	Null Hypothesis	Test Stats	Value	Prob.
Employment	C(1)=C(2)=C(3)=0	F-statistic	522	0.00
		Chi-square	1568	0.00
Health	C(4)=C(5)=C(6)=C(7)=0	F-statistic	5.6	0.04
		Chi-square	10.3	0.03
Education	C(8)=C(9)=C(10)=C(11)= 0	F-statistic	2.6	0.03
		Chi-square	10.5	0.03
Law order	C(12)=C(13)=C(14)=C(15)= 0	F-statistic	0.63	0.64
		Chi-square	2.53	0.64
Private Investment	C(16)=C(17)=C(18)=C(19)=0	F-statistic	0.68	0.60
		Chi-square	2.7	0.60
Trade Deficit	C(20)=C(21)=C(22)=C(23)=0	F-statistic	1.88	0.12
		Chi-square	7.5	0.11

The results of the Wald test presented in table 10 indicate that health, education, their lags, and the lags of the dependent variable are jointly associated with the employment level in the long run. Conversely, expenditure on law and order, private investment, and trade deficits, as well as their lags, do not appear to have any significant effect on employment in the long run. This is evidenced by the fact that the null hypothesis is accepted, as all coefficients of these variables are jointly zero. The remaining variables, however, such as health, education, and their lags, are found to be jointly associated with employment in the long run.

### Error Correction Model

For checking the short-run relationship of this model, an Error Correction Model (ECM) was applied. The value of the Error Correction Term (ECT) was found to be -0.035 and was statistically significant. This implies that the system is adjusting towards its long-run equilibrium at a rate of 3.5% per quarter. All the variables in the model have both short-run and long-run relationships. Thus, the ECM provides a useful tool to analyze the short-run dynamics of the system.

**Table 11: Wald Test**

	Null Hypothesis	$\chi^2$ Value	Prob.
Employ	C(2)=C(3)=C(4)=C(5)=0	139	0.00
Health	C(6)=C(7)=C(8)=C(9)=0	9.77	0.04
Education	C(10)=C(11)= C(12)=C(13)=0	8.8	0.06
Law Order	C(14)=C(15)=C(16)=C(17)=0	0.3	0.98
Pvt. Inv.	C(18)=C(19)=C(20)=C(21)=0	2.08	0.72
Trade B.	C(22)=C(23)=C(24)=C(25)=0	2.07	0.72

The Wald test results presented in table 11 indicate that the null hypothesis was only rejected in the case of employment and health, suggesting that there was a short-term relationship between these variables and the dependent variable. However, the results suggest that the other variables; law and order, trade balance and private investment and their lags did not have a joint association with the dependent variable (employment rate).

## Concluding Remarks

Government investing in any kind of economic situation influences well-being, the circulation of wealth, as well as the size and the appropriation of efficient capability. The result of government expenses on the aggregate economic situation has got tremendous value in the literature of business economics, specifically for developing nations. This research paper tried to look at the influence as well as the importance of government spending, private investment, and trade deficit on the well-being of the individuals of the of Pakistan's society from 1972 to 2021, within an ARDL framework. This study additionally concentrated on the disaggregated degree of federal government expenses such as the social sectors (health and education), economic services, subsidies, as well as maintenance of law and order in the country. The study concerns attended to in this research are, do fiscal measures improve the well-being of the individuals of the society, or do they result in misallocating public resources as well as hurt the economic well-being? This research study additionally looked at the effect of the varying structure of federal government outlays forming over time, as well as identifies the short-run addition to the long-run effect on major macroeconomic variables. The empirical results suggested that all components of government spending had a substantial long-run organization with a person's welfare variable namely per capita income, except law-and-order costs which has a negative effect yet is statistically irrelevant. In the case of employment level, federal government spending on education had a substantial favorable long-run impact on employment rate. Nonetheless, expenses on health had a substantial adverse effect on the employment rate. Various other components of government investing had no substantial support for employment.

This research might offer some guidelines for the economic managers that they should priorities their expenditures planning at the time of preparing budget. Special emphasis should be given on education and health sectors and enhance the well-being of individuals in Pakistan. On top of that, this research additionally thinks about the influence of income inequality and the level of hardship on the well-being of people in Pakistan. The outcomes indicate that both revenue inequality and also destitution have a substantial negative impact on the well-being of people in the country. This suggests that the government must focus on lowering inequality among individuals, sectors, regions, and poverty to improve the well-being of people in Pakistan.

In last this study mentions the limitation of this research. The information about income inequality as well as the level of poverty in required time series data are not readily available which might be a better indicator of an individual's welfare as compared to per capita income and employment rate. Future researchers might make use of these for comparison and far better results. Furthermore, this research study did not consider the impact of other factors such as political instability, corruption, and financial plans on the well-being of individuals in Pakistan. Hence, an additional research study is needed to explore the effect of these variables on the well-being of individuals in the country.

## References

- Adam, C.S., & Bevan, D.L. (2005). Fiscal Deficits and Growth in Developing Countries. *Journal of Public Economics*, 89, 571-597.
- Ahsan, A., & Qadeer, M. A. (2018). Impact of Government Spending on Economic Growth in Pakistan: An Empirical Study. *Pakistan Journal of Social Sciences (PJSS)*, 38(1), 1-9.
- Alexiou, C. (2009). Government Spending and Economic Growth: Econometric Evidence from the South Eastern Europe (SEE). *Journal of Economic and Social Research*, 11(1) 2009, 1-16
- Ali, A., & Qadeer, M. A. (2017). Role of Government Spending in Economic Development of Pakistan. *Journal of Humanities and Social Sciences*, 22(2), 29-36.

- Alshahrani, S. A. Ali J. Alsadiq (2014). *Economic Growth and Government Spending in Saudi Arabia: An Empirical Investigation*. IMF Working Paper WP/14/3
- Asghar, N, Awan, A., & Rehman, H. (2012). Government Spending, Economic Growth and Rural Poverty in Pakistan. *Pakistan Journal of Social Sciences*, 32(2), pp. 469-483
- Asghar, N, Azim, P., & Rehman, H. (2011). Impact of Government Spending in Social Sectors on Economic Growth: A Case Study of Pakistan. *Journal of Business & Economics*, 3(2), pp. 214-234.
- Ashghar, Z., & Zahra, M. (2012). A Benefit Incidence Analysis of Public Spending on Education in Pakistan Using PSLM Data, *The Lahore Journal of Economics*, 17(2), pp. 111-136
- Attari, M. I. J., & Javed, A. Y. (2013). Inflation, Economic Growth and Government Expenditure of Pakistan: 1980-2010. *Procedia Economics and Finance*, 5, 58–67.
- Aurangzeb (2003). Relation between Health Expenditure and GDP in an Augmented Solow Growth Model for Pakistan: An Application of Co-integration and Error-Correction Modeling. *The Lahore Journal of Economics*, 8(2).
- Bénétrix, A. S., & Lane, P. R. (2009). The impact of fiscal shocks on the Irish economy. *The Economic and Social Review*, 40, 407–34.
- Blanchard, O., & Perotti, R. (2002). An empirical characterization of the dynamic effects of changes in government spending and taxes on output. *The Quarterly Journal of Economics*, 117.
- Bose, N., Haque, M. E. and Osborn, D.R. (2007). Public Expenditure and Economic Growth: A Disaggregated Analysis for Developing Countries. *The Manchester School*, 75(5) 533–556.
- Burnside, A. C., Eichenbaum, M. and Fisher, J. D. M. (2004). Fiscal shocks and their consequences. *Journal of Economic Theory*, 115, 89–117.
- Cebi, C., & Culha, A.A. (2014). The Effects of Government Spending Shocks on the Real Exchange Rate and Trade Balance in Turkey. *Applied Economics*. 46(26) 3151-3162.
- Corsetti, G., & Müller, G. J. (2006) Twin deficits: squaring theory, evidence and common sense, *Economic Policy*, 21, 597–638.
- Eugene, M. B. (2023). Impact of government expenditure on economic growth in different states in South Africa, *Cogent Economics & Finance*, 11(1), 2209959, DOI: 10.1080/23322039.2023.2209959
- Ghali, K. H. (1998). Government Size and Economic Growth: Evidence from a Multivariate Cointegration Analysis. *Applied Economics*, 31, 975-87.
- Guseh, J. S. (1997). Government Size and Economic Growth in Developing Countries: A Political-Economy Framework. *Journal of Macroeconomics*, 19(1), 175–192.
- Kirikkaleli, D., & Ozbeser, B. (2022). New insights into an old issue: Exploring the nexus between government expenditures and economic growth in the United States. *Applied Economics Letters*, 29(2), 129–134. <https://doi.org/10.1080/13504851.2020.1859448>
- Kim, S., & Roubini, N. (2008). Twin deficit or twin divergence? Fiscal policy, current account and real exchange rate in the U.S. *Journal of International Economics*, 74.
- Komain, J. (2007). *The Relation between Government Expenditures and Economic Growth in Thailand*. Working Paper, School of Development Economics National Institute of Development Administration Bangkok, 10240, Thailand.
- Loizides, J., & Vamvoukas, G. (2005). Government Expenditure and Economic Growth: Evidence from Trivariate Causality Testing. *Journal of Applied Economics* 8(1), 125-152.
- Magazzino, C. (2012) The Nexus Between Disaggregated Public Spending and GDP in the Euro Area. *Economics Bulletin*, 32(3), 2560-2579.
- Mountford, A., & Uhlig, H. (2009). What are the effects of fiscal policy shocks? *Journal of Applied Econometrics*, 24, 960–92. doi:10.1002/jae.1079.
- Nurudeen, A., & Usman, A. (2010). Government Expenditure and Economic Growth in Nigeria, 1970-2008: A Disaggregated Analysis. *Business and Economics Journal*, 1–11.

- Saleem, M., & Qadeer, M. A. (2017). Impact of Government Spending on Employment Generation in Pakistan. *Pakistan Journal of Social Sciences (PJSS)*, 37(2), 167-172.
- Shkodra, J., Krasniqi, A., & Ahmeti, N. (2022). THE impact of government expenditure on economic growth in southeast European countries. *Journal of Management Information & Decision Sciences*, 25(4), 100–1025.
- Tang, T. C. (2009). *Wagner's Law versus Keynesian Hypothesis in Malaysia: Impressionistic View*. Discussion Paper 21/09, Department of Economics, Monash University, 1–10.
- Tang, T. C. (2001). Government Expenditure and National Income in Malaysia. *Journal Analysis*, 8 (1&2), 37–51.
- Wahab, M. (2011). Asymmetric Output Growth Effects of Government Spending: Cross-Sectional and Panel Data Evidence. *International Review of Economics & Finance*, 20(4), 574–590.
- Wahyudi, W. (2020). The Relationship between Government Spending and Economic Growth Revisited. *International Journal of Economics and Financial Issues*, 10(6), 84–88.
- Wu, S.-Y., Tang, J.-H., & Lin, E. S. (2010). The Impact of Government Expenditure on Economic Growth: How Sensitive to the Level of Development? *Journal of Policy Modeling*, 32(6), 804–817. <http://doi.org/10.1016/j.jpolmod.2010.05.011>
- Yasin, M. (2000). Public Spending and Economic Growth: Empirical Investigation of Sub Saharan Africa. *Southwestern Economic Review*, 4(1), 59–68.