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A Comprehensive Assessment of Fiscal Policy and Economic Development: An ARDL Analysis

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Abstract

This paper examines the intricate relationship between fiscal policy and economic development, focusing on the case of Pakistan. Employing the ARDL methodology, we investigate the dynamic effects of various fiscal indicators on economic development over the period 1995-2018. The study employs a comprehensive set of variables, including the sustainable development index (SDI), labor force participation rate, gross fixed capital formation, secondary school enrollment gender parity index, government expenditures, tax revenues, public debt , budget deficit , development expenditures, non-development expenditures, direct taxes, indirect taxes, domestic debt, and external debt. The results explore that public spending exerts a significantly positive influence on sustainable development. Conversely, taxes, public debt, and budget deficit exhibit noteworthy negative and substantial effects on sustainable development.

Keywords: Fiscal Policy, Sustainable Development, Pakistan, ARDL, Budget Deficit

1. Introduction

One of the challenges facing by the international community is to achieve the sustainable development. Development and its sustainability have been the centeral agenda of countries all around the world. It is believed that development is meaningless if it cannot be sustained over and over again (Murshed & Mredula, 2018). It comprises of three main concepts namely economic development, social development and environmental protection. Moreover, sustainable developmentgoals (SDGs) consist of 17 worldwide goals with 169 targets aimed at ensuring the sustainable development (SD) universally. In current years, the concept of sustainable development has gained much importance in the field of public finance. It creates new challenges for scientists and policy makers. There are many hurdles in order to enhance the sustainable development and one of them is the financial support.

Fiscal policy is viewed as a fundamental tool to establish the economic development in a nation. There is an adequate pool of discussion regarding the role and size of government intervention ineconomies. Consequently, governments attempt to kindle economic development by usingdifferent instruments. Generally, fiscal policy is majorly measured in public spending, tax revenue, budgeting, government investments and debts (Babalola, 2015). Fiscal policy is the instrument that government utilizes to affect the country. The focus of the government is to promote long-run sustainable economic growth. The continued growth of any nation is supportive to enhance the people's living standard in numerous ways like declining the poverty, improving the infrastructure and educational facilities, fighting enlarged inflation, and reducing the external dangers. It may be viewed that no nation accumulates high level of economic growthwithout the good governance. Countries without intervention of government face different kind of disorders that freeze up their economic growth with the passage of time (Madni & Chaudhary, 2017).

Government spending is a vital fiscal tool that can be utilized to stabilize and improve the economic performance of country. The government accumulates revenues to finance the spending. Keynes (1936) argued that government expenditures positively influence to economic growth by multiplier impacts on aggregate demand. Government expenditure is categorized into two main components; one is development expenditures and other is non development expenditures. According to Pakistan Economic Survey 2018-19, during the last five years, the total expenditure as % of GDP on average reached to 20.5 %, though during the FY2018, it was the highest at 21.6 percent of GDP. Current spending in FY 2018 reached 16.9 % as compared tothe last five year average of 16.3 % of GDP, while development spending maintained its share of 4.7 percent of GDP as per the average of the last five years.

At the starting of the 21st century, developing countries faced the problem of excessive indebtedness that is one of the most important challenges for these countries. Needless toidentify; through taxing and borrowing government can fund its budget (Akram, 2011; Ali & Naeem, 2017). Public debt is commonly categorized into the domestic and external debt. External debt assembling is the general fact of developing nations as well as it has become a universal characteristic of financial sector of the majority of nations. Pakistan' fiscal section has faced multi-dimensional challenges throughout the years because of extreme unproductive spending on one hand and lower tax revenues on the other. Usually higher unproductive spending and lesser tax revenue left limited financial amount for government investment and social protection net. As Pakistan is also a developing nation so it faces grim debt difficulties. Over the time, external debt burden and debt repayment burden are increasing continuously. According to the report of World Bank 2000-2001, Pakistan is amongst the highly indebted countries as the current as well as future debt

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situation of Pakistan is very severe (Ali & Mustafa, 2012). Here the question arises that how Pakistan can promote the sustainable development with rising current expenditures, public debt, deficit andlower revenue. So this study is aimed to check whether the government expenditures, tax revenue, budget deficit and public debt have any impact on sustainable development of Pakistan. Rest of the study is organized as: Section 2 explains the literature review. Section 3 highlights the model specification. Section 4 evaluates the data and methodology. Section 5 elucidates the results and discussions. Section 6 encapsulates the conclusion and policy recommendations.

2. Literature Review

The previous studies on the association of fiscal policy and economic growth are also a part of this study. For example, Munir & Sultan (2018) studied the taxes effect on economic growth in Pakistan utilizing time series data from 1976 to 2014. The findings showed that direct taxes, international trade taxes, sales tax and other indirect taxes positively influenced real GDP in long-run. Ahmad *et al.* (2018) analyzed the association between indirect taxes and economic growth utilizing time series data from 1974-2010 in Pakistan and concluded that in long term indirect taxes negatively influenced economic growth however it had not significant consequences in the short term. Tung (2018) analyzed the effect of fiscal policy on economic growth in Vietnam. The results supported the presence of long term relationship amongst the variables and explained that in short-term and long-term, fiscal deficit negatively influenced economic growth however private investment, FDI and net exports positively affected economic growth. Hussain & Zafar (2017) explored short-run and long-run association between public expenditure components and economic growth and revealed that in both long term and short term,military expenditure and fiscal balance positively influenced the economic growth. Karagoz & Keskin (2016) analyzed the link between fiscal policy and macroeconomic variables employing data from 2003Q1-2015Q2 in Turkey. The outcomes showed that there was a limited impact of government expenditures andrevenues on macroeconomic variables. Hasnul (2015) analyzed the government spending impact on economic growth, applying time series data from 1970-2014 in Malaysia. The findings revealed that government spending negatively influenced growth. Additionally, the outcome of the categories of government spending explained that development expenditure and housing spending negatively linked to the economic growth while there was insignificant impact of defense, healthcare, education, and operating expenditures on economic growth. Khan et al. (2015) checked the government spending and taxes effect on economic development and indicated that total taxes negatively affect development whereas total spending and capitalspending had no significant effect on development. Kakar (2011) explored the linkages among fiscal variables and economic development. The outcome showed that fiscal policy influenced the long-term economic development. Nurudeen & Usman (2010) explored the relationship between public expenditures and economic growth, utilizing time series data during 1979-2007 in Nigeria. The result indicated that there was negative impact of recurrent spending, capital spending and education expenditure on economic growth. Padda & Akram (2009) investigated the impact of tax policies on economic growth by utilizingthe panel data of seven Asian nations. The results revealed that changes in tax rate had permanent effect on output but transitory impacts on growth rate.

From the literature review of fiscal policy and economic growth it can be concluded that fiscal policy has a mixed effect on economic growth for various economies because of differences in policies, research methods, data set, country sample and circumstances. There are very limited studies in which four components of fiscal policy namely government expenditures, taxes, public debt and budget deficit are simultaneously analyzed at aggregate and disaggregate level. In this study we examine the effects of government expenditures, taxes, public debt and budget deficit on sustainable development at aggregate and disaggregate level. So, this study differs from other studies in this perspective.

3. Model Specification

In this study two models namely aggregate and disaggregate model are estimated. In aggregate model we check the impact of aggregate fiscal variables on sustainable development. In disaggregate model we check the impact of disaggregate fiscal variables on sustainable development. Aggregate fiscal variables consist of government expenditure, tax revenue, public debt and budget deficit. Disaggregate fiscal variables consist of different categories of government expenditures, taxes and public debt. Government expenditures are divided into the development and non-development expenditures, taxes are considered into two types, direct and indirect tax while public debt is categorized into domestic and external debt. The models can be expressed as:

Aggregated Model

$$SDI = \alpha_0 + \alpha_1 LFPR + \alpha_2 GFCF + \alpha_3 SSE + \alpha_4 GE + \alpha_5 TAX + \alpha_6 PD + \alpha_7 BD + \varepsilon \quad (1)$$

Disaggregate Model

$$SDI = \alpha_0 + \alpha_1 LFPR + \alpha_2 GFCF + \alpha_3 SSE + \alpha_4 DE + \alpha_5 NDE + \alpha_6 DT + \alpha_7 IDT + \alpha_8 DD + \alpha_9 ED + \alpha_{10} BD + \varepsilon \quad (2)$$

Where;
SDI = Sustainable Development Index
LFPR = Labor Force Participation Rate (% of total population on ages 15+)
GFCF = Gross Fixed Capital Formation (% of GDP)
SSE = Secondary School Enrollment (Gross)
GE = Government Expenditures (% of GDP)
TAX = Tax (% of GDP)
PD = Public Debt (% of GDP)
BD = Budget Deficit (% GDP)
DE = Development Expenditures (% of GDP)
NDE = Non-Development Expenditures (% of GDP)
DT = Direct Taxes (% of GDP)
IDT = Indirect Taxes (% of GDP)
DD = Domestic Debt (% of GDP)
of GDP)ED = External Debt (% of GDP)

4. Data and Methodology

In this study time series data is utilized for Pakistan over the period 1995 to 2018. The data is taken from various sources such as; World Development Indicator (WDI), Handbook of Statistics and Pakistan Economic Survey. We have applied ARDL technique to analyze the relationship between the variables.

5. Measurement of Sustainable Development Index (SDI)

Sustainable development index is constructed through the principal component analysis by usingeight dimensions namely atmosphere, health, economic development, consumption and production patterns, poverty, global economic partnership, governance and demographic. Each dimension comprises of different indicators. The data of all these dimensions is taken from WDI. Dimensions and its indicators are shown in Table 1.

Table 1: Sustainable Development Index

Dimensions	Used Variables
Health	• Mortality rate under-5 (per thousand) • Immunization DPT (% of children ages 12-23 month)
Consumption and production patterns	• Energy use (kg of oil equivalent per capita) • Combustible renewable and waste (% of total energy)
Economic development	• GDP per capita growth (annual %) • Inflation, GDP deflator (annual %) • GDP per capita (current US$)
Global economic partnership	• Current account balance (% of GDP) • Net official development Assistance (ODA) received (% of GNI)
Governance	• Intentional homicides (per 100,000 people)
Poverty	• Poverty headcount ratio at national poverty lines (% of population) • GINI index (World Bank estimate)
Atmosphere	• Other greenhouse gas emissions, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) (thousands metric tons of CO2 equivalent)
Demographic	• Population growth (annual %) • Age dependency ratio (% of working age population)

Source: UN (2007)

6. Results and Discussions

Table 2. shows long run results of FP-SDI model as an aggregate model. The findings show that the impact of labor force participation rate (LFPR) on sustainable development is positive in Pakistan. When the labor force participation rate increase, this lead to increase in productivity and causes to promote economic growth ultimately sustainable development. The influence of GFCF on sustainable development is positive. Moreover, the impact of government expenditure (GE) on sustainable development is positive in Pakistan. It means that if government expenditure (GE) increases, sustainable development will also increase. The justification behind this result is that government expenditure positively influences to sustainable development through the multiplier impacts on aggregate demand. When the government spending increases, it causes to an increase in employment rate, due to this income level of the people increase, consumption level increase and then the level of aggregate demand increase. The result is supported by (Ram, 1986; Lahirushan & Gunasekara, 2015 and Madni & Chaudhary, 2017; Ali, 2022).

Table 2: ARDL Estimates of FP -SDI Model (Aggregate Analysis)

Dependent Variable: D(SDI) Selected Model: ARDL(1,0,2,0,1,1,1,1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFPR	0.0015	0.0003	5.2642	0.0008
GFCF	0.0005	0.0002	2.1675	0.0621
SSE	0.0001	0.0001	0.8249	0.4334
GE	0.5319	0.1411	3.7689	0.0055
TAX	-0.0009	0.0003	-3.3978	0.0094
PD	-1.3341	0.2526	-5.2805	0.0007
BD	-0.0023	0.0004	-6.2310	0.0003
C	1.0079	0.0111	91.1948	0.0000

Source: Author's calculations

The results also reveal that tax has negative effect on sustainable development in Pakistan. The reason behind this results are the confirming that higher taxes hamper investment level because of increasing cost, this lead to decrease in production, employment and inflation; which reduce economic growth and sustainable development. The result are supported by (Szarowska, 2010; Saqib *et al.* 2014; Engen & Skinner, 1992; Folster & Henrekson, 2001; Dladla & Khobai, 2018; Babalola, 2015 and Khan *et al.* 2015).The findings also show that public debt (PD) has negative effect on sustainable development in Pakistan. Public debt negatively influences sustainable development due to the "crowding out" and "debt overhang" effects. Debt overhang hypothesis explains that due to large amount of debt, the government will have to boost the future taxes in order to funding the high debt service payment. This results have collaboration with (Pegkas, 2018 and Kaakunga, 2006). The effect of budget deficit (BD) on sustainable development is also negative inPakistan. The reason of the negative impact of fiscal deficit on sustainable development might be that when government print new money, due to this money supply increases which causes to increase in inflation. This result is supported by (Ali *et al*. 2010; Gupta *et al.* 2005; Kaakunga, 2006 and Fatima *et al.* 2012) with the statement that budget deficit negatively affects economic growth.

Table 3. demonstrates the estimates of FP-SDI model as disaggregated model. The effect of LFPR, GFCF and SSE on sustainable development is positive and statistically significant except GFCF which is insignificant in this model. The results show that the effect of development expenditures (DE) on sustainable development ispositive. The channel behind this result is that, when development expenditure increase, it will lead to increase in infrastructure that will diminish the cost of production. This causes to rise in investment level and employment opportunities; that increases the economic development. Due to increase in development expenditures, human capital increase that is the precondition of economic growth so, it will lead to rise in development. This result is supported by (Hussain *et al*. 2017; Kaakunga, 2006; Igwe *et al*. 2015 and Adefeso *et al*. 2010) who concluded that development expenditures had positive impact on economic growth. Additionally, the findings explore that the non-development expenditures (NDE) has negative effect on sustainable development. Furthermore, the impact of direct taxes (DT) on sustainable development is negative. The reasons behind this result are the following: due to higher taxes, people depress from

working for long hours or even searching for jobs that will diminish income of the individual andtheir aggregate demand; higher direct taxes hamper investment because of increasing cost; and because of direct taxes people do not work efficiently and cause to decline in productivity. All these reasons lead to reduce the sustainable development. This result is in line with the findings of(Matallah & Matallah, 2017 and Igwe *et al*. 2015) who report that direct taxes negatively influence the economic growth.

Table 3: ARDL Estimates of FP-SDI Model (Disaggregate Analysis)

Dependent Variable: D(SDI) Selected Model: ARDL(2,1,0,1,0,1,1,1,1,1,1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFPR	24.3674	0.6762	36.0336	0.0000
GFCF	0.0056	0.0079	0.7081	0.4801
SSE	0.0362	0.0036	9.9440	0.0000
DE	0.0129	0.0023	5.6693	0.0000
NDE	-0.1020	0.0254	-4.0147	0.0001
DT	-0. 0358	0.0113	-3.1814	0.0018
IDT	0.6131	77.6539	63.8761	0.0023
ED	-0.4648	42.5158	-42.9152	0.0548
DD	-0.7585	52.5862	-38.3310	0.0006
BD	-0.6131	35.1381	-32.1183	0.0207
C	0.4648	23.1301	25.8232	0.1090

Source: Author's calculations

The findings encapsulates that indirect taxes (IDT) have positive effect on sustainable development. The reasoning of the positive impact of indirect taxes on sustainable development might that due to increase in indirect taxes, government revenue increase, this lead to rise in public spending. Due to this the aggregate demand increase which ultimately causes to increasein economic development. The result is also supported by (Ogundana *et al*. 2017 and Matallah &Matallah, 2017). Further, the findings represent that the impact of external debt (ED) on sustainable development is negative in Pakistan. The reason behind this result is the reality of debt overhang problem. This hypothesis states that due to large amount of debt the government will increase the future taxes in order to fund the huge debt service payment. The findings reveal that the effect of domestic debt (DD) on sustainable development is also negative in Pakistan. The rationale behind this result is the fact that domestic debt decrease economic growth is due to the crowding out effect. When government borrowing arising from fiscal deterioration, which declines the lending capacity of the country. The results are consistent with Atique & Malik (2012) and Rais & Anwar (2012). The outcome also indicate that the impact of budget deficit (BD) on sustainable development is negative and statistically significant. The reasons of the negative impact of fiscal deficit on sustainable development might be that when government print new money, due to this money supply increase which causes to increase in inflation. Due to increase in inflation aggregate demand declines that reduce economic performance ultimately sustainable development. This resultss are apported by (Ali *et al.* 2010; Gupta *et al.* 2005 and Fatima *et al.* 2012).

7. Conclusion and Policy Recommendations

The main purpose of this study is to find out the effects of fiscal policy on sustainable development in Pakistan by utilizing the time series data from the period 1995 to 2018. The specific objectives of this study are: to construct the sustainable development indexfor Pakistan, to examine the impact of aggregate fiscal variables on sustainable development and to examine the impact of disaggregate fiscal variables on sustainable development. Sustainable development index (SDI) is constructed through principal component analysis by using 8 dimensions namely; health, economic development, consumption and production patterns, demographic, poverty, atmosphere, global economic partnership and governance. The findings of ARDL bound analysis support the existence of cointegration among the variablesin both aggregate and disaggregate model. The long run results of aggregate model represent that the impact of public spending on sustainable development is significantly positive while taxes, public debt and budget deficit have negative and significant impact on sustainable development. The long run results of disaggregate model reveal that the impact of development expenditure and indirect taxes is positive and significant on

sustainable development while non-development expenditures, direct taxes, domestic debt, external debt and budget deficit have negative and significant effect on sustainable development.

On the basis of the findings, this study recommends that

- Government should increase their development spending because it boosts up the sustainable development.
- Government should ensure an efficient and equitable tax system that will be capable of producing adequate revenue to meet up a large fraction of government expenditures and investment needs, causing to reduction in fiscal deficit and diminishing debt to GDPratio.
- In case of Pakistan, debt is mostly used in unproductive ways and results showed that non development expenditures reduce sustainable development. So, there is a need of effective domestic and external debt management as well as the debt should be utilized in anefficient way in the productive investment purpose then it can add value to the Pakistan's economy.
- Government should decline non productive expenditures in order to decline the fiscal deficit. If the government is able to reduce its budget deficit then debt to GDP ratio will decline because to finance the deficit government borrow domestically or externally.

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