

Impact of Fiscal Policy on the Industrial Development of Afghanistan

Abstract

Industrialisation is crucial for economic growth and development, being recognised as the most efficient way to overcome technical and economic challenges and enhance production efficiency and labour productivity. The industrial sector is a key driver of economic progress, underscoring the significance of identifying the factors influencing its development. This study investigates the impact of government fiscal policies on industrial sector development in Afghanistan from 2001 to 2021, employing the ARDL approach. The findings reveal that in the short term, government spending and gross domestic product exert a significant and positive influence on industrial sector development, with GDP exhibiting a more substantial impact than government expenditure. Conversely, industrialisation itself and foreign direct investment (FDI) demonstrate negative effects. In the long term, government spending and FDI significantly impede industrial sector development, indicating that a 1 per cent increase in government expenditure reduces industrial development by 0.31 per cent, while a 1 per cent increase in FDI diminishes it by 0.38 per cent. In contrast, the effect of gross domestic product remains positive and significant in both the short and long term. Thus, expansionary fiscal policies, encompassing heightened government infrastructure investments and support for domestic production, can propel industrial growth.

Keywords: Industrial Development, Fiscal Policies, Autoregressive Distributed Lag (ARDL) Model, Afghanistan's Economy.

1. Introduction

Keynes was the first economist to assert that fiscal policy, which involves the government's decisions on spending and taxation, has a substantial impact on the economy [1]. Government fiscal policies are vital in shaping the industrial sector's development. They have the potential to drive economic growth, encourage investment, and foster innovation[2]. Additionally, through fiscal policies, the government can offer financial assistance to industries, establish a favourable business environment, and enforce regulations to safeguard domestic industries from unfair competition. This particular aspect of fostering a conducive business environment is of great interest to the author[3].

Industry is the term used to describe all economic activities involving the processing of raw materials and the manufacturing of goods in factories. Industries consist of groups of companies or factories contributing to the process of industrialisation. Industrialisation refers to the establishment and expansion of industries in a specific region or country[4]. It also denotes an increase in the share of manufacturing in the GDP and the employment of the active labour force[5]. Governments worldwide have consistently acknowledged the crucial role of industrial development as a primary driver of economic growth and prosperity[6]. In this regard, fiscal policy, comprising taxation, government spending, and budgetary decisions, significantly influences the industrial perspective and fosters innovation-driven development [6,7]. Governments in developing economies face a significant challenge in establishing a sustainable development path through effective industrial policies. These policies must drive productivity growth and attract foreign direct investment (FDI) to support industrial development[8]. Lately, government policies have become more concerned about managing and enhancing the economy. To increase the economy's growth and development over time, governments have implemented a variety of macroeconomic policy approaches, one of which is fiscal policy[9]. Some scholars argue that strategic government involvement is essential for addressing market failures and supporting industrial development. On the other hand, critics claim that excessive government intervention can distort market forces and lead to inefficiencies.[10].

By examining the impact of government fiscal policies on industrial sector development, researchers can gain insight into how these policies affect economic performance and the overall competitiveness of a country. Additionally, understanding the relationship between government fiscal policies and industrial sector development can inform policymakers in their decisions regarding tax incentives, subsidies, and other measures aimed at boosting the industrial sector. Moreover, such research can

also shed light on the effectiveness of different fiscal policy approaches and guide policymakers toward implementing strategies that yield optimal outcomes for industrial sector growth and economic development[11].

The industrial sector is widely recognised as a vital component of any country's economy, with far-reaching effects on both domestic and international social, political, and economic dynamics. Consequently, fostering its growth and development has become a key objective for most societies. Different economic schools hold differing perspectives on the impact of fiscal policies on actual economic variables in both the short and long term. This research seeks to explore the influence of fiscal policies on the development of Afghanistan's industrial sector, a pivotal element of the country's economy. The central question addressed in this study is whether fiscal policy impacts the value added to the industrial sector over both the short and long term. To address this question and achieve the research objective, the authors designated the ratio of industrial value added to GDP as the dependent variable, while the ratio of government expenditures to GDP, Gross Domestic Product (GDP), and Foreign Direct Investment (FDI) were selected as the independent variables. The study employed the ARDL model. The hypothesis posited in this study is that government expenditures, GDP, and FDI contribute significantly to the industrial development in Afghanistan.

2. Literature review

[12] Investigated the influence of government expenditures on the growth of Nigeria's industrial sector using regression analysis. The results revealed that government capital expenditures, taxes, and the monetary policy rate positively and significantly affect industrial sector growth, while the real interest rate has a negative and non-significant impact.

[13]Analysed the influence of fiscal policy on Nigeria's manufacturing sector output. The results revealed that government expenditures have a significant impact on manufacturing sector output, as evidenced by the size and significance of the coefficient and p-value. Furthermore, the findings suggest a long-term relationship between fiscal policy and manufacturing sector output. [1] Conducted a study on the influence of fiscal policy on the industrial sector. The empirical findings suggest that the industrial sector reacts positively to shifts in tax revenue and the consumer price index but negatively to changes in government spending and the BI interest rate. Additionally, the variance decomposition analysis demonstrates that government spending has the most substantial impact on the industrial sector compared to the other variables examined in the study.[14]Analysing the influence of fiscal policy on Iran's industrial growth using the ARDL model, the findings suggest that the fiscal policy variables do not exert a significant long-term impact on the industrial sector.[15] An examination of successful industrialisation in developing countries is driven by factors such as initial economic conditions, demography, factor endowments, and geography. Additionally, promoting investments, enhancing education, managing trade and capital openness, fostering financial sector development, and ensuring macroeconomic and institutional stability are crucial.[16] Conducted a study on the effects of fiscal and monetary policies on the Indonesian economy and industry growth. Used the computable general equilibrium (CGE) model and discovered that these policies have a positive impact on Indonesia's macroeconomic performance, leading to changes in GDP, investment, consumption, and the capital rate of return. However, their finding also identified a research gap in the model used, as the computable general equilibrium model is unsuitable for establishing correlations.

[17] Investigating the effects of fiscal policy on the construction sector of Lagos, Nigeria, the results revealed that government expenditures and taxation significantly and positively correlated with the construction sector of Lagos state.[18] Taxes significantly impact the performance of manufacturing companies in Nigeria. These findings indicate that the company's performance influences the amount of tax paid.[19] The study revealed a positive correlation between the manufacturing sector and government fiscal expenditure, interest rate, trade openness, population political instability, and labour. In contrast, the inflation rate had a negative impact on output growth in various sectors, except for manufacturing. The study concluded that implementing uniform fiscal policy in Nigeria is challenging due to variations in sectoral responses.[20] Examined how fiscal policy affects a small open economy such as Norway. While expansionary fiscal policy can stimulate economic activity, it may also influence the structure of industries and potentially result in de-industrialization if it encourages growth in the non-traded goods sector at the cost of the traded goods sector.[21] An investigation was conducted using panel cointegration analysis on the long-term relationship between fiscal policy components, institutions, and economic growth in Asian countries from 1982 to 2001. The

findings revealed a substantial long-term association between these variables, signifying that fiscal policy has a positive influence on the region's economic growth.

[22]Studies have investigated the impact of fiscal reform on long-term economic growth in specific countries and shown the positive effects of comprehensive fiscal reforms on economic growth.[23]Analysed the impact of fiscal policy on economic growth and found that public deficit and expenditure had positive effects, while taxes and total public revenues had negative effects.[24]Utilising the ARDL model based on the time series data reveals that fiscal policy is pivotal in boosting economic growth and investment in Kenya.[25] Examining the relationship between public finance and economic growth during Albania's transition, the results indicated that both the size of the government and fiscal deficit significantly impacted the economic growth of transition countries.[26] used the ECM and ARDL models to examine how fiscal policy affects the economic growth of four SARC countries: India, Bangladesh, Sri Lanka, and Pakistan. The findings showed that neither tax revenue nor government expenditure significantly affected the economic growth of these countries. However, both private and public investment played a crucial role in driving real GDP.[27]Analysed the macroeconomic impact of fiscal policy using the Keynesian growth model. The results showed that from 1930 to 2007, there were significant changes in consumption and production structure. These changes had both positive and negative impacts on the growth and budget balance associated with the fiscal policy.

[28]Explored the various energy efficiency schemes and incentives implemented in selected Asian countries and discovered that China and India have successfully implemented market-based instruments (MBIs), unlike Japan. However, in the case of Indonesia, it has been found to be ineffective.[29] Indicated that shifts in fiscal conditions, personal expenses, and the real effective exchange rate predominantly influence industries with low technological intensity. Meanwhile, production in high technological-intensity industries generally responds to changes in investments, foreign demand, and fiscal policy.[30,31] Found that fiscal policy has a negative impact on the economy.[32] Found that raising consumption taxes and reducing income taxes could be sufficient for long-term growth, particularly in developing Asian economies.[33] Using the ECM model, the researchers investigated the impact of government expenditure on output in both Indonesia and Malaysia and found a strong relationship between fiscal policy variables and output.[34]Analysis of fiscal policy's impact on the business cycle shows that it has a more significant effect in OECD countries than in non-OECD countries. [35]Utilising the ARDL model to examine the impact of fiscal policy on the economic growth of Pakistan. The results indicated a long-term relationship between fiscal policy and economic growth, showing a positive effect.

[36]Explores recovery strategies by analysing the impact of tax reductions on power and innovation incentives. Providing tax incentives for energy efficiency can benefit a company's innovative efforts and market share. Additionally, tax credits for energy efficiency can reduce financial barriers and encourage investment in innovation. Supporting artistic ventures can help businesses cut costs and improve cash flow. [37]Found that stock prices reflect past fiscal policy in the long term yet only respond efficiently to unexpected fiscal policy news in the short term. Anticipated fiscal policy information has a delayed relationship with current stock returns. Additionally, the study showed that monetary policy information is not efficiently integrated into stock prices, and its influence on stock returns is more significant than fiscal policy's.

3. Methodology and Data Source

In this study, the researchers utilised secondary data from the World Bank database to investigate the impact of fiscal policies on the value-added of the industrial sector in Afghanistan. They employed the ARDL econometric model to examine the relationships between independent and dependent variables in both short-run and long-run time frames. This model was chosen due to its ability to estimate these relationships over different periods. Additionally, considering the nature of the variables used, which are stock variables in macroeconomic literature, it was deemed essential to estimate the dynamics of the dependent variable. Equation 1 represents the study model based on previous studies by [38,39]

$$\text{Indus}_t = \alpha_0 + \alpha_1 \text{GOV}_t + \alpha_2 \text{GDP}_t + \alpha_3 \text{FDI}_t + \varepsilon_t \quad (1)$$

In equation (1), the dependent variable "Indus" is calculated as the ratio of industrial value-added to gross domestic product (GDP). "GOV" represents the government's fiscal policy and is calculated as the ratio of government expenditures to GDP. "GDP" denotes gross domestic product at constant 1390 prices and is considered an indicator of market demand. FDI represents foreign direct investment.

4. Result and Discussion

Unit root test

One issue with using time series data is the presence of stationarity. The Dickey-Fuller unit root test and the Phillips and Perron test are the most essential tests for examining the stability of time series data. The regression tests include both intercept with trend and intercept without trend.

Table 1, Unit Root Tests for Model Variables

Variables	Levels				First Difference			
	Dickey-Fuller (ADF)		Phillips Perron (PP)		Dickey-Fuller (ADF)		Phillips Perron (PP)	
	Constant without Trend	Constant with Trend	Constant without Trend	Constant with Trend	Constant without Trend	Constant with Trend	Constant without Trend	Constant with Trend
lindus	-2.79* (0.076)	0.61 (0.99)	-2.53 (0.12)	2.38 (1.000)	-2.44** (0.017)	-4.41** (0.012)	-3.05** (0.047)	-4.02** (0.026)
lgdp	-3.16** (0.038)	-1.81 (0.65)	-6.6** (0.019)	-1.99 (0.57)	-2.35** (0.021)	-3.80** (0.047)	-3.03** (0.045)	-4.28** (0.016)
lfdi	-2.51 (0.127)	-3.33 (0.088)	-2.49 (0.130)	-3.32* (0.090)	-5.9*** (0.000)	-6.2*** (0.000)	-5.9*** (0.000)	-6.4*** (0.000)
lgov	-3.04* (0.050)	-1.16 (0.88)	-2.08 (0.25)	-1.18 (0.88)	-3.84** (0.044)	-4.9*** (0.004)	-4.2*** (0.004)	-4.8*** (0.005)

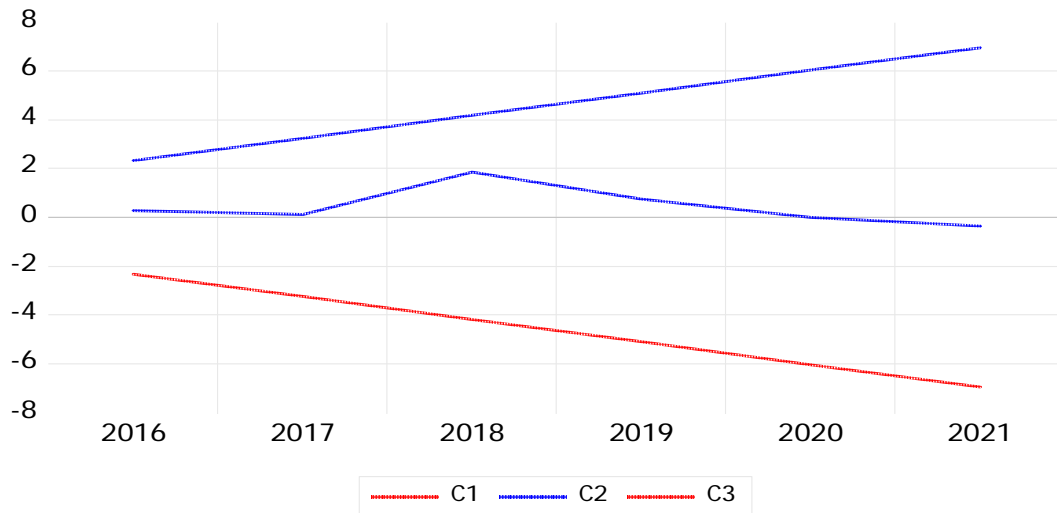
Source: Authors' calculation

Note: Symbols ***, **, and * indicate the significance of variables at the 1%, 5%, and 10% levels, respectively.

The unit root test results in Table 1 revealed that the behaviour of our selected variables varies depending on the methodology used. It was observed that certain indicators confirmed the presence of the unit root using the Dickey-Fuller test, while they rejected it based on the Phillips Perron test. Conversely, some variables exhibited the opposite behaviour. This discrepancy implies that certain variables were stationary or $I(0)$ according to the Dickey-Fuller method, whereas they were nonstationary according to the Phillips-Perron test. Consequently, we proceeded to differentiate the variables. Following this adjustment, all of our variables became stationary and integrated at order one ($I(1)$) based on both methods, with 95% and 99% confidence levels.

In the context of variables with different degrees of stationarity ($I(1)$ and $I(0)$), we can use the Autoregressive Distributed Lag (ARDL) method to examine the relationships between these variables effectively. This approach entails incorporating the variables' lagged values into the model for a comprehensive analysis.

Figure 1: CUSUM Test for Model Stability



Source: Authors' calculation

When estimating the model, it is essential to assess its validity. Firstly, the stability of the model is verified through the CUSUM and CUSUM of squares stability tests, as depicted in Figure 1. The statistical plots are within bounds, indicating the presence of model stability.

The F-Bounds test

The Bounds Test and F-Bounds test, developed by Ted Peterson in 2001, are utilised to improve the accuracy of determining the long-term relationship between variables. These tests assess the long-term relationship and cointegration between variables, and the results are displayed in Table two at a significance level of five per cent. The table 2 presents the long-term relationships for variables.

Table 2, Long-Term Relationship and Cointegration Test between Variables

Sample Size	5%		10%		F-Bounds
	I(1)	I(0)	I(1)	I(0)	
30	4.223	3.058	3.560	2.525	4.408
Asymptotic	3.490	2.560	3.090	2.200	

Source: Authors' calculation

The presence of cointegration is determined by comparing the F-statistic to upper and lower bounds. If the F-statistic exceeds the upper bound, it confirms cointegration; if it falls below the lower bound, there is no cointegration. With the obtained F-statistic value surpassing the upper bound, the existence of cointegrating vectors is confirmed, indicating that a long-term relationship between variables can be established. Once the long-term equilibrium relationship is estimated, the focus can shift to estimating short-term relationships through error correction models. These models allow us to understand variables' short-term adjustments and their connection to long-term equilibrium values.

Long-Run Relationship Estimation

Table 3, Long-Term Coefficient Estimation Results in the ARDL Model

ARDL (2,2,2,2,0) Selected based on Schwarz Bayesian Criterion
Dependent Variable is Lindus
19 Observation used for estimation from 2002 to 2021

Variable	Coefficient	Std. Error	T-Statistic	Prob.
LNGOV (-1)	-0.313269	0.162719	-1.925215	0.0334
LNGDP (-1)	0.382663	0.657563	1.038171	0.0156
LNFDI (-1)	-0.375860	0.102361	-3.671915	0.0023
C	1.365288	2.583401	0.528485	0.6049

Source: Authors' calculation

The findings in Table three indicate that government expenditure has a notable negative impact on industrial development in the long term. Specifically, a one per cent increase in government expenditure results in a 0.31 per cent decrease in the industrial sector's contribution to economic growth over the study time period. This suggests that government spending acts as a hindrance to industrial development in the economy. Despite receiving assistance from the global community, government fiscal policies have not effectively promoted economic development and industrial development over the past 20 years. This might be because approximately 70 per cent of the government budget during this period was allocated as a normal budget, with only 30 per cent allocated to the developmental budget. Moreover, corruption in the implementation of these projects further diminished their effectiveness in promoting industrial development in this time period. Additionally, Afghanistan's reliance on foreign aid for its development budget led to most of the aid being allocated to non-discretionary budgets, with only a tiny portion contributing to developing the country's industrial sector.

The data provided in Table 3 indicates a significant and positive impact of Afghanistan's GDP on industrial development. Specifically, a one per cent increase in GDP over the long term resulted in a 0.38 per cent increase in the industrial sector's share of the GDP. This signifies a strong and positive correlation between industrialisation and GDP, as reflected in the industrial development index. It's important to note that while multiple variables contribute to industrial sector growth, GDP has notably contributed to this growth during the period under review. Foreign direct investment (FDI) has had a significant and negative effect on the development of the industrial sector. Specifically, a one percent increase in long-term FDI results in a 0.37 percent decrease in the industrial sector's share. This is due to Afghanistan's economy not being technology-driven and the inflow of foreign capital with modern technology leading to the decline of Afghanistan's industrial sector in the long run.

Short-Run Relationship Estimation

Table 4, Estimation of Dynamic Coefficients and Error Correction Model (ECM) in the ARDL Model

ARDL (2,2,2,2,0) Selected based on Schwarz Bayesian Criterion				
Dependent Variable is Lindus 19 Observation used for estimation from 2002 to 2021				
Variable	Coefficient	Std. Error	T-Statistic	Prob.
DLNINDUS (-1)	-0.386846	0.185265	-2.088063	0.0608
D(LNGOV)	0.674022	0.125167	5.384966	0.0002
D (LNGOV (-1))	0.667358	0.165012	4.044297	0.0019
D(LNGDP)	1.427724	0.468738	3.045890	0.0111
D(LNGDP (-1))	1.815965	0.453434	4.004919	0.0021
D(LNFDI)	-0.010625	0.032760	-0.324320	0.7518

D(LNFDI (-1))	0.153422	0.040167	3.819606	0.0028
CointEq*	-0.448964	0.068731	-6.532146	0.0000
F-Statistic=8.024056	Prob(F-statistic) =0.0013	R-squared= 0.73	Durbin-Watson=2.16	

Source: Authors' calculation

The findings from the estimation of the dynamic equation in Table four suggest that industrial development has a significant negative effect with one break, as determined by the optimal lag using the Schwartz-Bayesian criterion. Conversely, the impact of government expenditure on industrial development is positive and significant in the current period and after one break. Specifically, a one-percent increase in government expenditure is associated with a 0.67 per cent increase in the industrial sector's share in the current year and a 0.66 per cent increase after one break.

The gross domestic product (GDP) significantly influences the demand for industrial production. The industrial sector's close interconnection with the overall economy, through both backward and forward linkages, means it responds to increased demand for total production by boosting its output and fostering growth. Utilising the dynamic ARDL approach, it becomes evident that GDP has a positive and significant impact on industrial growth. This underscores the strong relationship between GDP and industrial growth, driven by the industrial sector's ability to meet Afghanistan's economic demand. Consequently, GDP has a notable positive effect on industrial development, both in the current period and after a certain time. Specifically, a one per cent increase in GDP results in more than a one per cent increase in the share of industrial development in the current period and after a certain time. It is clear that industrial development unfolds over the long term. Thus, foreign direct investment does not have a significant positive impact on industrial development in the current period, but it does have a notable positive effect after a certain time. In other words, a one per cent increase in foreign direct investment leads to a 1.15 per cent increase in the industrial sector's share after a certain time. The second approach to model interpretability in the ARDL involves using the Error Correction Model (ECM). Error correction measures the speed at which short-term imbalances move towards long-term equilibrium. In simpler terms, the coefficient of the error correction model can be interpreted as short-term. In this model, the error correction coefficient is negative and significant, with a value of 0.44. This indicates that in each period, 44 per cent of short-term imbalances in industrialisation are adjusted towards their long-term trend.

5. Conclusion and policy implication

According to conventional theories of economic growth, growth is thought to be a result of labour, technology, and capital. However, [40] Criticised this theory and argued that long-term economic growth is actually driven by increasing returns to scale in production. He emphasised that the determinant of economic growth is returning to scale. He noted that the industrial sector stands out as the only sector not subject to diminishing returns to scale, mainly due to its ability to attract labour. As a result, this unique characteristic has led to the industrial sector becoming a focal point of countries' development policies, and it has now emerged as a leading sector in the economy when compared to other productive sectors.

The current study's main objective is to evaluate fiscal policy's influence on industrial development in Afghanistan from 2001 to 2021. To explore this, the researchers chose the ratio of industrial value added to GDP as the dependent variable, while the ratio of government expenditures to GDP, Gross Domestic Product (GDP), and Foreign Direct Investment (FDI) were selected as the independent variables. The study utilised the ARDL model.

The findings of our study indicate that industrialisation is a complex, long-term process, and its progression cannot be solely attributed to short-term policies. Upon conducting a short-term analysis, we observed that industrial growth and foreign direct investment (FDI) had an adverse impact on industrial growth. Conversely, government expenditure and gross domestic product (GDP) demonstrated a positive and statistically significant effect on industrial development in Afghanistan. Specifically, a one per cent increase in GDP led to more than a one per cent increase in industrial development, suggesting a robust correlation between GDP and industrial progress.

In recent years, government expenditure has played a substantial role in Afghanistan's GDP, exhibiting a positive impact on industrial development in the short term. Nonetheless, our study also

indicated that in the long term, government expenditure, as part of government policy, negatively and significantly influenced industrial development. This implies that a one per cent increase in government expenditure resulted in a 0.31 per cent decrease in the industrial sector. Despite receiving assistance from the global community, the government's endeavours to bolster industrial development have been hindered by inefficient budget allocation and prevalent corruption within the Afghanistan government.

Similarly, foreign direct investment (FDI) also negatively and significantly impacted industrial development, with a one per cent increase in FDI leading to a 0.38 percent decrease in industrial development. Conversely, in the long term, GDP positively and significantly impacted industrial development, with a one per cent increase in GDP resulting in a 0.38 per cent increase in industrial development.

Following an analysis of the findings, researchers have established several recommendations for the government and policymakers. In the short term, it is advised that the government focuses on increasing the GDP and government expenditures by supporting economic activities that bolster industrial development. This can be achieved through various measures such as enhancing the business environment, investing in infrastructure, and promoting entrepreneurship. Additionally, directing expenditure towards projects with a direct impact on industrial development and implementing vocational training programs, as well as providing tax incentives and subsidies for industrial firms, are essential. It is crucial to ensure the effective utilisation of expenditure.

In the long term, it is imperative for the government and policymakers to revamp fiscal policy, curb corruption, and reallocate ordinary expenditures towards development-oriented projects while also ensuring transparency and accountability in government spending. Furthermore, there is a need for policies that support sustainable industrial growth, effective utilisation of Foreign Direct Investment (FDI), and technology transfer. It is important for Afghanistan to transition towards a technology-driven economy and establish a comprehensive industrial policy framework, fostering a meaningful partnership between the public and private sectors.

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