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FISCAL POLICY AND ECONOMIC GROWTH IN RESOURCE-RICH COUNTRY: EMPIRICAL EVIDENCE FROM AZERBAIJAN

Abstract

The relationship between fiscal policy and economic growth is one of the longest-lived economic discourses. In this context, countries with emerging institutions and resource-based economies are of particular interest. Therefore, the Azerbaijani economy was chosen as the object of study. The purpose of this paper is to analyze the relationship between fiscal policy and economic growth in Azerbaijan and analyze the possible existence of the BARS curve relationship in Azerbaijan. The study covers quarterly data for 2005Q1–2023Q2. The autoregressive distributed lag (ARDL) bound test is used to evaluate the relationship between fiscal variables and economic growth (both general and non-oil), as well as the BARS curve relationship. The analysis revealed a positive association between government spending and both overall and non-oil economic growth over the long term. On average, a 1% rise in government spending corresponds to a 0.6% increase in economic growth. Conversely, in the short term, a negative relationship is observed between government spending and economic growth, encompassing both the general and non-oil economy. Notably, no statistical evidence supporting the presence of the BARS curve relationship in Azerbaijan was identified. Amid the circumstances of decreasing oil production in Azerbaijan, these results put more emphasis on the importance of increasing the productivity of government spending.

Keywords fiscal policy, BARS curve, economic growth, government spending, tax revenue

JEL Classification G28, E62, O23

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INTRODUCTION

In economic theory, the role of fiscal policy has been a subject of debate for a long time, and this debate still continues. Azerbaijan's economy can be classified as a resource-based economy, with the oil sector consistently contributing an average of 40% to the GDP over the past 15 years. The widely accepted idea that resource-rich countries have more volatile and generally unsuccessful fiscal policies makes this topic even more relevant for the case of Azerbaijan. There is a vast amount of literature on this topic, but the results often contradict each other. While some literature acknowledges the positive link between government spending and economic growth, others reject this hypothesis. Some found different results for short-term and long-term interactions between fiscal variables and economic growth. Initiated by Barro (1990), the hypothesis of the non-linear relationship between government size and economic growth has gotten more attention recently and many research papers evidence an inverse U-shaped curve.

Azerbaijan experienced strong economic growth driven by increasing oil production and rising oil prices in the 2000s. The sharp decrease in oil prices in 2014 caused devaluation of currency and recession in

Azerbaijan's economy. The fiscal policy was deemed unsuccessful during the period as it failed to mitigate the commodity cycle's impact on the economy. Since then, one of the main goals of fiscal policy has been to stimulate non-oil economic growth to achieve diversification and decrease oil dependency. The expected decrease in the volume of oil production in Azerbaijan makes the optimization of fiscal policy even more crucial.

1. LITERATURE REVIEW

Governments utilize fiscal and monetary policy to regulate the economy through business cycles and stimulate economic growth. Keynesian economic theory, which was used intensively in the years following the Great Depression in the 1930s, suggests that governments can stimulate economic activity using expansionary fiscal policy through the Aggregate Demand channel. Wagner's rule views government spending as an endogenous factor, and public expenditure will increase as the economy grows. The theory of Ricardian equivalence also puts the effectiveness of fiscal policy to stimulate economic growth under question.

De Castro and Hernández de Cos (2008) identified a negative association between government spending and economic growth in Spain utilizing the structured vector autoregressive (VAR) model. This finding was controversial as it contradicts Keynesian theory. Hamdi and Sbia (2013) found a positive link between economic growth and government spending in the long term for Bahrain. Olayungbo and Olayemi (2018) found a statistically significant negative link between economic growth and government spending in Nigeria in the long run. Olukayode (2009) could not find any significant link between government spending and economic growth in Nigeria. Employing a structured vector autoregressive model, Blanchard and Perotti (2002) found a positive link between government spending and economic growth in the United States.

Georgeta et al. (2021) included the governance indicators in the model to analyze the impact of different tax categories on economic growth. Focusing on the OECD countries, the study found a positive link between governance quality and control of corruption indicators and economic growth.

Some research papers separated government spending into categories to determine the productive and unproductive uses of government spending. Easterly and Rebelo (1993) revealed that transport and communication spending had the biggest correlation with economic growth. This investigation was one of the pioneers claiming that capital spending has a greater positive impact on economic growth compared to current government spending.

A positive link was found between government expenditures related to education and public infrastructure and real gross domestic product growth by Zagler and Dürnecker (2003). Analyzing the relationship between fiscal variables and economic growth, Sosvilla-Rivero and Rubio-Guerrero (2022) found a positive link between economic growth and government consumption spending, government wage and salaries expenditure, and government capital expenditure in Spain.

Devarajan et al. (1996) found a negative link between government capital expenditure and economic growth and a positive link between government current spending and economic growth. Devarajan et al. (1996) also evidenced an inverse U-shaped non-linear relationship between government capital spending and economic growth.

The theory of the inverse U-shaped relationship between government spending and economic growth initiated by Barro (1990) had a notable influence on this research topic. According to economic theories, there are widely known phenomena that necessitate government intervention in the economy, like externalities and common goods. Other widely accepted phenomena are disincentives created by taxation and the crowd-out effect caused by government borrowing. Thus, looking from one side, the government should intervene in the economy, but this intervention comes at a cost. Based on these dynamics, Barro (1990) presented the non-linear relationship link between government size and economic growth. Until some threshold, increasing government spending may support economic growth, but after that point, the

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costs will outweigh the benefits and dampen economic growth. After Barro (1990), Armey (1995), Rahn and Fox (1996), and Scully (1994) made significant contributions to this hypothesis. The curve depicting this non-linear relationship has often been called the BARS curve after their names.

Recently, many research papers revealed statistical evidence for the existence of an inverse U-shaped relationship between economic growth and government size in the economy. Herath (2010) found evidence for the BARS curve with the optimal government size of 26.6% in Sri Lanka. Christie (2014), using a dataset of 136 countries, found a threshold level of 33% for the whole sample. Altunc and Aydin (2013) found evidence for the BARS curve in Turkey, Romania, and Bulgaria, with the optimal government size of 25.2%, 20.4%, and 22.4%, respectively. De Mendonça and Cacicedo (2014) found a 21-22% optimal government size for Brazil. Asimakopoulos and Karavias (2015) found an 18% optimal government size from the dataset consisting of 129 countries. Separating the dataset into developed and developing countries, they found 17.96% and 19.12%, respectively. Forte and Magazzino (2016) found statistically significant evidence of the BARS curve in Italy. Kim et al. (2018), covering 47 countries, also found evidence for the BARS curve. Hajamini and Falahi (2018), focusing on 14 OECD countries in Europe, tried to find evidence for the non-linear relationship between economic growth and different categories of government spending: capital spending, current consumption spending, and current non-consumption spending. While they found statistically significant evidence for the first two, there was no statistically significant non-linear relationship between the latter and economic growth. Olaoye et al. (2020) discovered a 21.5% optimal government size level for 15 ECOWAS countries. Durucan (2022) supported the BARS curve for Turkey.

Prior research conducted in Azerbaijan merits additional attention for the objectives of this paper. Hasanov (2013) utilized the ARDLBT approach to analyze the relationship between real non-oil GDP as a dependent variable, real government spending, and real private investments as independent variables, focusing on the period of 1998–2012. Accordingly, in the short term, both real government spending and real private investment are significantly positively linked with real non-oil GDP. But in the long run, while real government spending is still significantly positively linked with real non-oil GDP, real private investment has a statistically weak link with real economic growth. As some portion of both the real private investments and real government spending may be related to the oil sector of the Azerbaijan economy, disaggregating real private investment into sectors and analyzing specifically non-oil real private investments' impact over the non-oil economic sector of Azerbaijan may yield rather interesting results. Unfortunately, there is no such available data for Azerbaijan.

Hasanov et al. (2019) utilized the FMOLS model to research the effect of social and physical infrastructure spending on the economic growth of Azerbaijan, especially focusing on non-oil tradable and non-tradable sectors separately. The study specifically focused on the timeframe ranging from 1995 to 2014, which did not include the period of recession following the decline in oil prices. While this approach offers valuable insights into the impact of certain factors on the economy during that period, a comprehensive analysis of the subject would necessitate examining the period, including the two most recent crisis periods (Recession caused by decreasing oil prices in 2014 and Covid-19 in 2020). The authors used budget social expenditures, budget infrastructure investments, non-oil capital stock, non-oil tradable employment, and non-tradable employment as independent variables. They found that both budget infrastructure investments and budget social expenditures had a statistically significant positive link with the non-tradable sector. However, while budget infrastructure investments were found to have a statistically significant positive relationship with the non-oil tradable sector, no statistically significant relationship was detected between social expenditures and the non-oil tradable sector. They also found that government expenditures positively affect the non-tradable sector to a greater extent compared to non-oil tradable sectors. Three possible explanations were offered:

- Construction expenses, which are included in the non-tradable sector, comprise a significant portion of government expenditure.

- Transition effect. The service industry, which is included in non-tradable sectors, grows faster when a closed economy – such as a former USSR country, Azerbaijan – starts trading and competition with foreign countries, compared to the manufacturing and agriculture sectors.

- Dutch disease, as increased government expenditure financed by oil revenues causes wage growth in non-tradable sectors as tradable sectors like manufacturing and agriculture face more international competition; this phenomenon results in the rotation of labor and capital to non-tradable sectors.

Aliyev and Nadirov (2016) utilized the ARDLBT cointegration model to research the long-run and short-run impacts of real government spending and real non-transfer government revenues over the non-oil economy of Azerbaijan for the period 2000–2015. They also included oil production and oil prices as the control variables. Non-transfer government revenues are a measure of tax revenues, as transfers from the State Oil Fund of Azerbaijan (SOFAZ) are excluded from budget revenue. The results show a positive link between the non-oil GDP of Azerbaijan and oil sector variables (namely, oil production and oil price changes).

Another finding is that in the long term, the impact of oil prices is still significant, while the impact of oil production becomes insignificant. The reason for the missing link between oil production and the non-oil economy may be that an increase in oil production implies a shift of resources from non-oil tradable and non-tradable sectors to the oil sector, which is not the case for an increase in oil prices. These results imply that oil price change should be included in regression equations as a control variable to research the impact of fiscal policy on economic growth in Azerbaijan. While government spending had a positive link with real non-oil GDP in the long term, non-transfer government revenues had a negative link.

Next, the short-term impacts are also worthwhile to consider. Thus, higher government spending is negatively correlated with non-oil GDP in the short term, but this relationship is not statistically significant. In addition, Aliyev and Nadirov (2016) found a positive statistically significant relationship between non-transfer government revenue and non-oil GDP. The last two findings in the short term can be attributed to automatic stabilizers to some extent; when the economic growth is high, tax revenues also grow in parallel with increasing revenues even if there is no discretionary government policy to improve tax rates. Finally, when economic growth is high, the need for transfer payments decreases. Agell et al. (2006) also touched on the issue of automatic stabilizers. However, as oil revenues are the main driver of Azerbaijan's economy, oil sector-related variables should be able to control business cycle changes mostly. Unfortunately, there is no publicly available quarterly unemployment rate data, which could further contribute to the model to control business cycles.

Aliyev et al. (2016) utilized OLS, ARDL, FMOLS, DOLS, and CCR methods to conduct the research with the same variables in the same period of 2000–2015. While they reaffirmed the previous findings, Granger Causality tests were run. They found a bi-directional causality link between real non-oil GDP and real government spending. Furthermore, non-transfer government revenues Granger caused real non-oil GDP and real government spending in the period of 2000–2015.

Seyfullayev (2020, 2022, 2023) examined the impact of protectionist policies, trade openness, and financial development on the economic growth of the Azerbaijani non-oil sector and found evidence that government regulatory measures have not yet led to the desired results. Seyfullayev and Seyfullali (2023) did not find arguments confirming the positive impact of financial development on the manufacturing sector of the Azerbaijani economy. Ibrahimov et al. (2023) found a positive impact of government infrastructure investments on GDP per capita.

Therefore, this study aims to:

- analyze short and long-run relationships between fiscal policy variables and general economic growth in Azerbaijan;

- analyze short and long-run relationships between fiscal policy variables and non-oil economic growth in Azerbaijan;

- test the existence of the BARS curve relationship between government size and economic growth in Azerbaijan.

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This paper incorporates more recent data, encompassing the period affected by the COVID-19 pandemic, during which Azerbaijan's economy faced another downturn in oil prices. The government responded proactively by employing fiscal policies to mitigate the impact of the pandemic. Furthermore, in addition to oil-sector-related variables, capital formation is introduced as a control variable. Notably, this paper is the first attempt to test the existence of the BARS curve relationship in Azerbaijan.

2. METHOD

Autoregressive Distributed Lag Bounds Testing (ARDLBT) presented by Pesaran et al. (2001) is used to analyze the relationships between variables. The advantages of the ARDLBT method include the ability to apply to small samples, I(1) and I(0) series simultaneously and to estimate long-run and short-run coefficients (Frimpong & Oteng-Abayie, 2006; Sulaiman & Muhammad, 2010).

This study uses three models; Models 1 and 2 check the short-term and long-term impact of government spending on general economic growth and non-oil economic growth, respectively. Real non-oil GDP growth is a dependent variable in Model 2 while total real GDP growth is in Model 1. Model 3 tests whether there is evidence for the BARS curve in Azerbaijan; dependent variable is total real GDP growth.

Three control variables are added to the model. Capital formation and trade openness have been used widely in previous research papers (Christie, 2014; De Mendonça & Cacicedo, 2014; Asimakopoulos & Karavias, 2015; Olaoye et al., 2020) on this topic as control variables. Additionally, the oil price change variable is added to the models as oil price changes significantly impact non-oil GDP (Aliyev & Nadirov, 2016) and total GDP in Azerbaijan. Since oil export has a major portion in the exports of Azerbaijan, the correlation coefficient between Brent crude oil price and the total trade of Azerbaijan is calculated as 0.87. Therefore, the total trade variable will be excluded from the model. Table 1 shows the list of variables.

The Augmented Dickey-Fuller test (Dickey & Fuller, 1981) is used to check the stationarity of the variables. Table 2 shows the results.

Table 1. Variable description

Variable	Symbol	Model inclusion	Definition	Source
Real GDP	LRGDPG	1, 3	CPI (consumer price index) is used to convert nominal GDP to real GDP	Central Bank of the Republic of Azerbaijan
Real non-oil GDP	LRNOGDP	2	CPI is used to convert nominal non-oil GDP to real non-oil GDP	Central Bank of the Republic of Azerbaijan
Real government expenditure	LRGOVEXP	1, 2	CPI is used to convert nominal government expenditure to real government expenditure	Central Bank of the Republic of Azerbaijan
Real budget revenue	LRTAXREV	1, 2	SOFAZ transfers are deducted from the total budget revenue. CPI is used to convert nominal government revenue to real government expenditure	Central Bank of the Republic of Azerbaijan, State Oil Fund of Azerbaijan
Real capital investment	LRCAPINV	1, 2	CPI is used to convert nominal capital investments to real capital investments	Central Bank of the Republic of Azerbaijan
Oil price	LOILPRICE	1, 2	Quarterly data of Brent Crude price (FRED, n.d.), converted into AZN using CBAR rates	Federal Reserve Economic Data, Central Bank of the Republic of Azerbaijan
Oil price change	OILPRCG	3	Change of Brent Crude oil price over the quarter	Federal Reserve Economic Data, Central Bank of the Republic of Azerbaijan
Government expenditure-to-GDP	GOVEXPTOGDP	3	Calculated by dividing government expenditure by GDP	Central Bank of the Republic of Azerbaijan
Capital investment ratio	CAPINV	3	Calculated by dividing capital investments by GDP	Central Bank of the Republic of Azerbaijan
Trade openness	Tradeopenness	3	Calculated by dividing total trade by GDP	Central Bank of the Republic of Azerbaijan

Note: Real GDP, real non-oil GDP, real government expenditure, real budget revenue, real capital investments, real total trade and oil price variables are included to Models 1 and 2 in the logarithmic forms.

Table 2. ADF test results

Indicators	I(0)		I(1)	
	Intercept	Trend and intercept	Intercept	Trend and intercept
RGDPG	–2.499	–3.375*	–3.894****	–3.916**
RNOGDPG	–1.867	–1.443	–3.904***	–6.424***
RGOVEXP	–2.681*	–2.076	–5.498***	–19.950***
RTAXREV	–5.707***	–7.080***	–8.024***	–7.963***
RCAPINV	–1.386	–1.109	–4.905***	–5.068***
RTOTTRADE	–3.839***	–3,574**	–4.714***	–4.774***
OILPRICE	–2.494	–3.597**	–9.430***	–9.362***
GOVEXPTOGDP	–2.808*	–2.472	–12.624***	–12.839***
TAXREVTOGDP	–7.680***	–7.620***	–9.935***	–9.871***
TRADEOPENNESS	–2.089	–1.663	–4.673***	–4.853***
CAPINV	–1.907	–2.264	–4.823***	–4.747***

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10% level, respectively.

The specifications of the three models are presented below:

$$LRGDP = C_0 + \theta_1 lrgdp_{t-1} + \theta_2 lrgovexp_{t-1} + \theta_3 lrtaxrev_{t-1} + \theta_4 lrcapinv_{t-1} + \theta_5 loilprice_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta lrgdp_{t-i} + \sum_{i=0}^{n} \beta_i \Delta lrgov\exp_{t-i} + \sum_{i=0}^{p} \gamma_i \Delta lrtaxrev_{t-i} + \sum_{i=0}^{q} \delta_i \Delta lrcapinv_{t-i} + \sum_{i=0}^{r} \rho_i \Delta loilprice_{t-i} + u_t, \quad (1)$$

$$LRNOGDP = C_0 + \theta_1 lrnogdp_{t-1} + \theta_2 lrgovexp_{t-1} + \theta_3 lrtaxrev_{t-1} + \theta_4 lrcapinv_{t-1} + \theta_5 loilprcg_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta rnogdp_{t-i} + \sum_{i=0}^{n} \beta_i \Delta lrgovexp_{t-i} + \sum_{i=0}^{p} \gamma_i \Delta lrtaxrev_{t-i} + \sum_{i=0}^{q} \delta_i \Delta lrcapinv_{t-i} + \sum_{i=0}^{r} \rho_i \Delta oilprcg_{t-i} + u_t, \quad (2)$$

$$RGDPG = C_0 + \theta_1 rgdpg_{t-1} + \theta_2 govexptogdp_{t-1} + \theta_3 govexptogdp_{t-1}^2 + \theta_4 capinv_{t-1} + \theta_5 oilprcg_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta rgdpg_{t-i} + \sum_{i=0}^{n} \beta_i \Delta govexptogdp_{t-i} + \sum_{i=0}^{w} \omega_i \Delta govexptogdp_{t-1}^2 + \sum_{i=0}^{p} \gamma_i \Delta capinv_{t-i} + \sum_{i=0}^{r} \rho_i \Delta oilprcg_{t-i} + u_t, \quad (3)$$

where θ_i, i = 1,..., 6 represents long term coefficients; α_i, i = 1,..., m; β_i, i = 1,..., n; ω_i, i = 1,..., w; γ_i, i = 1,..., p; δ_i, i = 1,..., q; ρ_i, i = 1,..., r denote short term coefficients. The symbols m, n, w, p, q, r represents optimal lag lengths chosen using Akaike info criterion (AIC).

3. RESULTS AND DISCUSSION

Table 3 presents optimal lags for the models using AIC criterion.

Table 3. Selection of optimal models

Selected models	
Model 1	ARDL (2,4,0,1,1)
Model 2	ARDL (4,4,0,0,2)
Model 3	ARDL (3,3,3,0,3)

Table 4 presents the computed *F*-statistics from *F*-bounds tests. Instead of critical values compiled by Pesaran et al. (2001), Narayan's (2005) critical values are used as Narayan (2004) argues that Pesaran et al.'s (2001) critical values are not suitable for small sample sizes. Rejecting the null hypothesis means that there is a cointegration relationship between independent variables.

Table 4 shows that all series are cointegrated, thus the long-run coefficients can be estimated. The estimated long-run coefficients are presented in Table 5.

Tables 6 and 7 show error correction form results for Models 1 and 2.

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Table 4. F-bounds test results (Null hypothesis: No level relationship)

Critical value source	Test statistic value	Significance	I(0)	I(1)
Model 1				
Pesaran et al. (2001)	F-statistic = 14.76	1%	3.29	4.37
Narayan (2005)		1%	3.37	4.72
Model 2				
Pesaran et al. (2001)	F-statistic = 7.38	1%	3.29	4.37
Narayan (2004)		1%	3.37	4.72
Model 3				
Pesaran et al. (2001)	F-statistic = 13.44	1%	3.06	4.15
Narayan (2004)		1%	3.18	4.60

Table 5. Long-run estimate results and robustness check results

Panel A: Long-run estimate results			
Variables	**Model 1**	**Model 2**	**Model 3**
Dependent variable	**Log of Real GDP**	**Log of Real non-oil GDP**	**Real GDP growth**
Constant	4.085***	1.113	–0.048*
	(0.37)	(0.81)	(0.26)
LRGOVEXP	0.377**	0.587***	–
	(–0.05)	(0.16)	
LRTAXREV	0.048	–0.139	–
	(0.05)	(0.139)	
LRCAPINV	0.026	0.267**	–
	(0.05)	(0.12)	
LOILPRICE	0.313*** (0.04)	0.380*** (0.12)	–
OILPRCG	–	–	0.418***
			(0.10)
GOVEXPTOGDP	–	–	0.591
			(1.76)
GOVEXPTOGDP^2	–	–	–2.055
			(–3.07)
CAPINV	–	–	0.283**
			(0.11)
Panel B: Robustness check results			
Variable	Model 1	Model 2	Model 2
R-squared	0.91	0.92	0.70
Adjusted R-squared	0.90	0.90	0.61
Observations	70	70	70
Serial correlation (LM)	X^2_{SC} = 0.36 (0.83)	X^2_{SC} = 2.59 (0.27)	X^2_{SC} = 3.46 (0.18)
Heteroskedasticity (BP)	X^2_{SC} = 17.15 (0.13)	X^2_{SC} = 19.55 (0.11)	X^2_{SC} = 16.57 (0.15)

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Numbers in brackets in Panel A represent standard errors. Numbers in brackets in Panel B represent *P*-values.

Table 6. Model 1: Short-run estimate results

Variable	Model 1
Dependent variable: Log of Real GDP	
$CointEq_{t-1}$	−1.02***
	(0.10)
$\Delta LRGDP_{t-1}$	0.08*
	(0.05)
$\Delta LRGOVEXP$	0.08*
	(0.05)
$\Delta LRGOVEXP_{t-1}$	−0.25***
	(0.05)
$\Delta LRGOVEXP_{t-2}$	−0.17***
	(0.04)
$\Delta LRGOVEXP_{t-3}$	−0.13***
	(0.04)
$\Delta LRCAPINV$	0.10***
	(0.03)
$\Delta LOILPRICE$	0.10**
	(0.04)
R-squared	0.82
Adjusted R-squared	0.79
Observations	70

Note: Numbers in brackets represent standard errors.

Table 7. Model 2: Short-run estimate results

Variable	Model 2
Dependent variable: Log of Real non-oil GDP	
$CointEq_{t-1}$	−0.58***
	(0.08)
$\Delta RNOGDPG_{t-1}$	−0.41***
	(0.10)
$\Delta RNOGDPG_{t-2}$	−0.50***
	(0.10)
$\Delta RNOGDPG_{t-3}$	−0.37***
	(0.09)
$\Delta LRGOVEXP$	−0.03
	(0.08)
$\Delta LRGOVEXP_{t-1}$	−0.34***
	(0.11)
$\Delta LRGOVEXP_{t-2}$	−0.29***
	(0.10)
$\Delta LRGOVEXP_{t-3}$	−0.23***
	(0.08)
$\Delta LOILPRICE$	−0.03
	(0.56)
$\Delta LOILPRICE_{t-1}$	−0.12*
	(−0.06)
R-squared	0.81
Adjusted R-squared	0.79
Observations	70

Note: Numbers in brackets represent *t*-statistics.

Based on the Model 1 long-run estimation results (Table 5, Panel A), government spending and oil price changes have a statistically significant positive link with total GDP in Azerbaijan, while there is no statistically significant link between GDP and tax revenues and capital formation. Excluding the oil sector from GDP, capital formation also has a statistically significant positive link with non-oil GDP, besides government spending and oil prices based on Model 2 (Table 5, Panel A). The result regarding the positive link of government spending with non-oil GDP is in line with the results of Hasanov (2013), Aliyev and Nadirov (2016), and Aliyev et al. (2016) from Azerbaijan, but contradicts the results of Olayungbo and Olayemi (2018) from another oil-based economy – Nigeria. Another finding from Model 2 is the negative but statistically insignificant (at a 10% confidence level) link between government revenues, excluding SOFAZ transfers and non-oil GDP. While the direction of this link is also in line with Aliyev and Nadirov (2016), the link found in the mentioned paper was statistically significant.

Short-term estimation results of Models 1 and 2 are presented in Tables 6 and 7, respectively. Based on Table 6, while simultaneous government spending has a positive link with the general GDP, it has a statistically significant negative link at 1, 2, and 3 quarters lags. The capital formation and oil prices were found to have a statistically significant positive link with the general GDP of Azerbaijan in the short run. Based on Table 7, there is a statistically significant negative link between government expenditure and non-oil GDP in the short run. Aliyev and Nadirov (2016) also found a negative link (although statistically insignificant) between government spending and non-oil economic growth in the short run. This negative relationship can be in part attributed to the automatic stabilizers. Government transfer spending is expected to increase without any discretionary fiscal decision as the economy slows down and unemployment increases. Because of the mentioned endogeneity problem, a negative link may appear in this case. Unemployment rates could be used to control business cycles and automatic stabilizers' impact, but unfortunately, there is no available quarterly unemployment data for Azerbaijan. The fact that Abbasov and Aliyev (2018) found the bidirectional causality link between government spending and eco-

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nomic growth in the short term also raises the question of endogeneity for the short-run results. It is noteworthy that Abbasov and Aliyev (2018) found a unidirectional causality link from government spending to economic growth in the long term for Azerbaijan; this finding alleviates the endogeneity doubt for the long-term results. Another interesting finding in Table 7 is that while there is a weak negative link between oil prices and the non-oil economy in the long term, there is a non-significant negative link between oil prices and the non-oil economy in the short term (similar to the findings of Aliyev and Nadirov (2016)).

This paper also tested the existence of a non-linear relationship (the BARS curve) between government spending and economic growth in Azerbaijan. Model 3 results in Table 5, Panel A, show no statistically significant evidence for the inverse U-shaped relationship between government spending and economic growth.

CONCLUSION

Since 2004, Azerbaijan used oil revenues to finance government expenditure. Until the sharp decrease in oil prices in 2014–2015, Azerbaijan's economy boomed thanks to oil revenues. Since Azerbaijan's economy experienced a sharp recession and currency devaluation after a decrease in oil prices, the emphasis has been on enhancing the growth of the non-oil economy. While transfers from SOFAZ amounted to an average of 54% of total budget revenues from 2010 to 2015, this number has been 42% on average since 2015. As the government strategy focuses on decreasing dependency of the economy and budget revenues from the oil sector, the impact of government spending on enhancing non-oil economic growth has the utmost importance.

This paper tested the existence of the BARS curve relationship in Azerbaijan. The comparison of the optimal government size found from the BARS curve model with the real figures would offer valuable fiscal policy insights, but the results showed no statistically significant evidence for the inverse U-shaped relationship between government spending-to-GDP ratio and economic growth in Azerbaijan.

This paper also aimed to analyze the short and long-run relationship between fiscal variables and economic growth. Utilizing the ARDLBT approach, the results showed a positive link between government spending and non-oil GDP in the long run. However, the negative link found between government spending and non-oil GDP in the short run; this puts the success of fiscal policy in mitigating business cycles under question. The outcomes evidenced the negative but statistically insignificant (at a 10% confidence level) link between budget revenue and non-oil GDP in the long run.

The fact that SOFAZ transfers make up a significant part of Azerbaijan's government revenue and oil production is gradually decreasing makes the results of this paper worrisome. As government revenue will gradually decrease, driven by decreasing oil production, government spending should also be cut to some extent to prevent the fast depletion of the SOFAZ reserves. The positive link between government spending and non-oil GDP in the long run implies that decreasing government spending may result in the contraction of the non-oil economy in the long run. Amid these circumstances, to prevent economic contraction, budget spending and revenue should be optimized by concentrating on more productive components for economic growth.

Further analysis using different components of government spending and revenue would help to clarify the relationship between fiscal policy tools and economic growth. Some components may be more useful to mitigate business cycles in the short run, while others may be more productive for long-term economic growth. Unfortunately, there is no available quarterly data on government spending and revenue components. A more detailed and transparent database, including all fiscal indicators, is necessary to analyze the relationship between fiscal policy and non-oil economic growth in Azerbaijan.

AUTHOR CONTRIBUTIONS

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Formal analysis: Javid Seyfullali.
Funding acquisition: Javid Seyfullali.
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Visualization: Javid Seyfullali.
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