INTERNATIONAL CONFERENCE ON APPLIED ECONOMICS AND FINANCE

ICOAEF

since 2013

ICOAEF XV

FULL PAPER PROCEEDING

ISBN: 978-625-93913-9-7

11th - 12th MAY 2026

Bishkek - KYRGYZSTAN

ICOAEF XV

INTERNATIONAL CONFERENCE ON APPLIED ECONOMICS AND FINANCE

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THE IMPACT OF TRADE OPENNESS ON GOVERNMENT SIZE: TESTING THE COMPENSATION AND EFFICIENCY HYPOTHESES IN KYRGYZSTAN

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ABSTRACT

Globalization, with its economic, political, and social dimensions, makes the integration of countries into the international system inevitable. This process also gives rise to economic risks. Trade openness can make a country's economy vulnerable to external shocks. For developing countries, especially the smaller countries that broke away from the Soviet bloc, overcoming the obstacle is challenging. The tendency to increase public spending and the overall size of the public sector to limit the economic risks arising from trade openness is referred to in the literature as the compensation hypothesis. Conversely, the view that trade openness leads to a contraction of the public sector by increasing competitive pressure is referred to as the efficiency hypothesis. This study examines the influence of trade openness on government size in Kyrgyzstan from 1990 to 2024. The Fourier Autoregressive Distributive Lag cointegration test is applied by including economic growth as a control variable. The findings indicate that the variables are cointegrated. In the long run, increased trade openness is associated with a rise in government size, while economic growth tends to reduce it. An increase of 1% in trade openness leads to a 0.28% expansion in the public sector, whereas a 1% increase in growth results in a 0.21% contraction. In conclusion, the compensation hypothesis is found to be valid for the Kyrgyz economy, while the efficiency hypothesis is not supported.

Keywords: *Compensation Hypothesis, Efficiency Hypothesis, Government Size, Trade Openness.*

JEL Codes: *C12, F14, H11.*

1. INTRODUCTION

In the aftermath of the Soviet Union’s collapse, belief in communism largely disappeared, and the world transitioned from a bipolar to a unipolar system. This development has had numerous political and social consequences and has also led to an increase in trade between countries. Kyrgyzstan, one of the countries that broke away from the Eastern Bloc, saw its foreign trade volume's share of its gross domestic product rise from 72% in the early 1990s to 99% at the end of the 1990s, and reach a peak of 146% in 2008 (World Bank, 2026).

Cameron (1978) stated that the degree of openness of the economy to international markets is one of five factors explaining the growth in the scope of government activities. This study found that countries with high foreign trade volumes, such as the Netherlands, Denmark, Norway, and Sweden,

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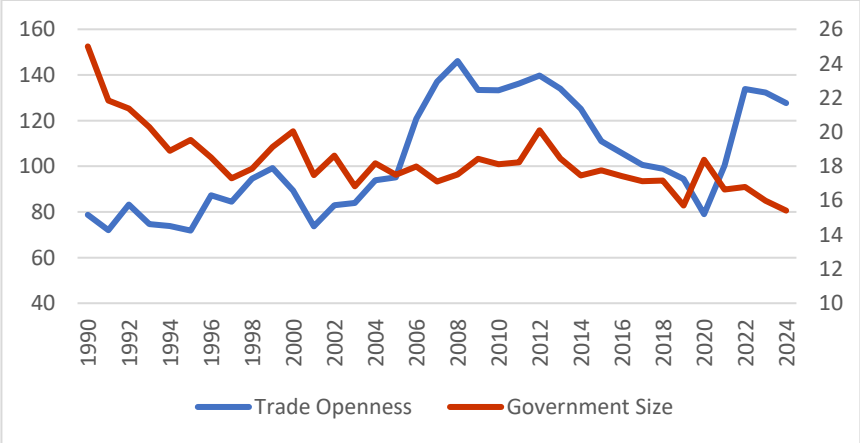
also have high government revenues. In contrast, countries with low foreign trade volumes, such as the United States, Japan, Italy, Spain, Australia, Germany, and France, also have low government revenues. This approach, known as the compensation hypothesis, argues that greater economic openness promotes industrialization, which in turn generates a range of economic and political dynamics that contribute to the expansion of the public sector. Rodrik (1998) empirically tested this hypothesis and concluded that it is valid. Faced with the economic risks and uncertainties created by increasing international trade, the state is trying to protect society by expanding social security, income transfers, and welfare programs.

On the other hand, according to Schulze and Ursprung (1999), increasing openness creates a competitive environment that forces governments to lower tax rates to attract capital. This, along with globalization, tends to reduce the size of the public sector by limiting public revenues. This approach, which posits an inverse relationship between trade openness and the size of the public sector, is known as the efficiency hypothesis. This hypothesis, in contrast to the compensation hypothesis, is a supply-side rather than a demand-side approach.

Trade liberalization is part of globalization, and it's very difficult to resist it. Genschel (2004) addressed the relationship between globalization and the welfare state and examined three different approaches: Globalization theory, globalization skeptics, and revisionism. The first approach argues that globalization weakens the welfare state, the second approach denies the impact of globalization, and the third approach defines globalization as both a consequence and part of the solution to the problems of the welfare state. The effects of globalization are thought to vary depending on countries, periods, and institutional conditions.

Kyrgyzstan, one of the four independent Turkic republics in Central Asia, like Kazakhstan, exhibits a more open trade structure compared to Turkmenistan and Uzbekistan. The country has implemented trade reforms through privatization and business restructuring, reduced trade barriers to increase trade volume, supported international integration, and sought to lower trade costs (Mazhikeyev et al., 2015).

Figure 1. Trade Openness and Government Size in Kyrgyzstan



Source: World Bank (2026)

Figure 1 shows the trends in trade openness and public sector size in Kyrgyzstan. Trade openness remained largely unchanged during the 1990s. However, it increased rapidly in the 2000s, peaking in 2008. Although it began to decline after the global financial crisis, it has increased again following the Covid-19 pandemic. Government size, in general, tends to decrease steadily.

The main objective of this study is to test the validity of the compensation and efficiency hypotheses for Kyrgyzstan. For this purpose, time series from 1990 to 2024 are analyzed using a Fourier-based cointegration test that takes into account both hard and soft transition structural breaks. The remainder of the paper is organized as follows: the first part covers the relevant literature, followed by a description of the data and methodology. Subsequently, the empirical findings are discussed, and the paper concludes with a summary of the results and their implications.

2. LITERATURE REVIEW

Some studies in the literature show that trade openness does not play a role in increasing the size of the public sector. Liberati (2007) investigated the relationship between trade openness and government spending for 20 selected countries using regression analysis. The study, which used time series data from 1967 to 2003, showed that trade openness reduces government spending, meaning the compensation hypothesis is invalid and the efficiency hypothesis is valid. Benarroch and Pandey (2012) analyzed 119 selected countries for the period 1972–2000. Findings from the Granger causality test indicated that the compensation hypothesis was invalid. Sener et al. (2015) investigated Türkiye for the period 1975–2013. In the study, which used the Johansen-Juselius cointegration and Granger causality tests, no relationship was found between the variables.

Numerous studies in the literature have shown that the compensation hypothesis is valid. Zakaria and Shakoor (2011) studied Pakistan for the period 1947–2009, while Lin et al. (2014) investigated 92 small developing countries between 1985 and 2010. Both studies, using regression analysis, found that trade openness increases the size of the government and that the compensation hypothesis is valid. Aregbeyen and Ibrahim (2014) evaluated Nigeria for the period 1970–2012, and Islam et al. (2022) evaluated Saudi Arabia for the period 1985–2019. These studies, employing the ARDL bounds test approach, found that trade openness is associated with increased government spending. Aztimur et al. (2023) analyzed China for the years 1990-2021. Findings from Fourier ADL cointegration and Hacker-Hatemi-J causality tests indicated that trade openness increased government size. Bharati et al. (2023) investigated 137 selected countries for the period 2000-2016 using regression analysis. The results indicate that trade openness affected government size but did not affect education, health, and military expenditures.

Some studies have reached different conclusions depending on the country. Turan and Karakas (2016) investigated the period from 1960 to 2011 using the ARDL bounds test approach. Accordingly,

the efficiency hypothesis is valid for Türkiye, and the compensation hypothesis is valid for Korea. Bayrakdar and Soyyiğit (2021) analyzed 6 Turkic republics between 1997 and 2017 using the Westerlund panel cointegration test. Their findings showed that the efficiency hypothesis was valid for Azerbaijan, Tajikistan, and Turkmenistan, while the compensation hypothesis was valid for Kyrgyzstan. Tekin et al. (2023) examined 11 Central and Eastern European countries for the period 1996-2021 using the Konya Bootstrap Granger causality test. As a result, it was observed that the compensation hypothesis was valid in four countries, while the efficiency hypothesis was valid in only one country.

3. DATA SET

The study employs annual time-series data covering the period from 1990 to 2024, yielding a total of 35 observations for each variable. All data were obtained from the World Bank database. Three variables are included in the model. Trade openness, which serves as the main explanatory variable, is measured by Trade (% of GDP). Government size is represented by General government final consumption expenditure (% of GDP). In addition, economic growth is incorporated as a control variable and is measured by GDP (constant 2015 US$). The natural logarithms of all variables were used in the empirical analysis.

4. METHODOLOGY

In this study, the cointegration approach developed by Banerjee et al. (2017) is employed to analyze the relationship between the variables. Extending traditional cointegration tests with Fourier functions can lead to improved test performance (Pascalau et al., 2022). The model under investigation is given in Equation (1).

$$GOV_t = \alpha_0 + \alpha_1 sin\left(\frac{2\pi k^* t}{T}\right) + \alpha_2 cos\left(\frac{2\pi k^* t}{T}\right) + \alpha_3 GOV_{t-1} + \alpha_4 TRA_{t-1} + \alpha_5 GDP_{t-1} + \alpha_6 \Delta GOV_{t-1} + \alpha_7 \Delta TRA_{t-1} + \alpha_8 \Delta GDP_{t-1} + \varepsilon_t \quad (1)$$

Here, *GOV* represents the dependent variable, *TRA* and *GDP* are the independent variables, and sin *and cos* are trigonometric terms that capture possible structural breaks. ε_t stands for the error term, *t* for the trend, *T* for the sample size, and *k* for the frequency value.

$$\alpha_3 = 0 \quad (2)$$

$$\alpha_3 < 0 \quad (3)$$

Equation (2) represents the null hypothesis that there is no long run relationship between the variables, and equation (3) stands for the alternative hypothesis that there is a long run relationship between the variables. The test statistic is obtained using equation (4):

$$t_{ADL}^F = \frac{\hat{\alpha}_3}{se(\alpha_3)} \quad (4)$$

Here, $\hat{\alpha}_3$ represents the ordinary least squares estimator of α_3, and $se(\hat{\alpha}_3)$ represents the standard error of $\hat{\alpha}_3$. Banerjee et al. (2017) determined the critical values. If test statistic is greater than the critical value, the null hypothesis is rejected.

5. FINDINGS

A unit root test was applied to check the stationarity of the time series, and the results are reported in Table 1.

Table 1. ADF Unit Root Test Results

Variable	Lag	t-stat.	Prob.
GOV	4	-1.316819	0.6085
TRA	0	-1.517956	0.5126
GDP	0	0.950471	0.9950
DGOV	0	-9.295850*	0.0000
DTRA	0	-5.155814*	0.0002
DGDP	0	-2.652191***	0.0932

Note: * and *** correspond to significance at the 1% and 10% levels, respectively. The Akaike Information Criterion (AIC) is employed to select the optimal lag length.

According to the ADF unit root test results, the test statistics for the GOV, TRA, and GDP variables at their level values are not statistically significant, indicating that these series are non-stationary and contain a unit root. However, when the first differences of the variables are considered, the DGOV and DTRA series become stationary at the 1% significance level, while the DGDP series becomes stationary at the 10% significance level. These findings indicate that all three variables are non-stationary in levels but become stationary after first differencing, implying that they are integrated of order one, I(1). Therefore, cointegration analysis can be employed to investigate the existence of long run relationships among the variables, and the results are reported in Table 2.

Table 2. FADL Cointegration Test Results

Dep. Variable	Indep. Variables		Optimal k	Minimum AIC	FADL Test Stat.
GOV (1)	TRA (3)	GDP (1)	5	-3.096708	-5.201501*

Note: * corresponds to statistical significance at the 1% level. The maximum lag length is set to 4.

According to the FADL cointegration test results, a long run relationship was found between the dependent variable GOV and the independent variables TRA and GDP. The fact that the test statistic is significant at the 1% significance level indicates cointegration between the variables. This result reveals that these variables move together in the long run and have an equilibrium relationship. DOLS was used to estimate the long run coefficients, and the results are reported in Table 3.

Table 3. DOLS Estimation Results

Variable	Coef.	Std. Error	t-Statistic	Prob.
TRA	0.280384	0.056175	4.991218*	0.0003
GDP	-0.214312	0.031949	-6.707966*	0.0000
C	6.439602	0.529887	12.15278*	0.0000
SIN	0.053754	0.011045	4.866634*	0.0004
COS	-0.000358	0.007434	-0.048219	0.9623

Note: * corresponds to statistical significance at the 1% level. The maximum lag length is set to 4.

In the DOLS model, since the logarithms of the variables have been taken, the TRA and GDP coefficients are interpreted as elasticity. Accordingly, a 1% increase in the TRA variable increases GOV by approximately 0.28%, while a 1% increase in GDP decreases GOV by approximately 0.21%. These results show that TRA has a positive effect on GOV, while GDP has a negative effect. The constant term and the cosine term are also statistically significant.

6. CONCLUSION

The findings of this study offer significant implications when evaluated within the framework of two fundamental hypotheses explaining the impact of globalization and trade openness on the public sector. In the case of Kyrgyzstan, the study examines the effect of increased trade openness on the size of the public sector in a small, developing transition economy following the collapse of the Soviet Union. The results indicate that the compensation hypothesis holds for the Kyrgyz economy. According to this hypothesis, the public sector expands to offset the economic risks arising from increased openness. Conversely, the efficiency hypothesis is not supported; that is, the shrinking effect of increased competitive pressure on the public sector is not confirmed in the specific case of Kyrgyzstan.

In the empirical analysis, the FADL cointegration test was used for the period 1990-2024, and economic growth was included in the model as a control variable. The findings revealed a long run cointegration relationship between the variables. According to the long run coefficients, a 1% increase in trade openness increases the size of the public sector by approximately 0.28%, while a 1% increase in economic growth reduces the public sector by approximately 0.21%.

The findings of this study do not align with the results of Liberati (2007), who found the efficiency hypothesis to be valid, nor with those of Benarroch and Pandey (2012) and Sener (2015), who found the compensation hypothesis to be invalid. However, they are consistent with the findings of Zakaria and Shakoor (2011), Lin et al. (2014), Aregbeyen and Ibrahim (2014), Islam et al. (2022), Aztimur et al. (2023), and Bharati et al. (2023), which support the validity of the compensation hypothesis. Furthermore, the findings of Bayrakdar and Soyyiğit (2021), a study specifically on Kyrgyzstan, which also confirms the compensation hypothesis, directly support the results of this study. In this respect, the

findings are consistent with the approach in the literature that defends the validity of the compensation hypothesis.

These results confirm the effect of trade openness in increasing public spending, while growth plays a contractionary role in the public sector. Economic growth, by relatively shrinking the public sector, is consistent with the strengthening of market mechanisms and the private sector taking on a more effective role in resource allocation. In this context, it can be stated that the growth process has the potential to create a more efficient economic structure by reducing the state's weight in the economy.

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