

Does Control of Corruption Matter in the Nexus between Trade Openness and Economic Development? The Case of Saudi Arabia

هل السيطرة على الفساد مهمة في معرفة العلاقة الثنائية بين الانفتاح التجاري والتنمية الاقتصادية؟ حالة المملكة العربية السعودية

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Abstract:

Objectives: The current research proves that Trade Openness (TO) is a significant source for a major oil world producer country such as Saudi Arabia. Therefore, the goal of this article is to investigate the impact of TO on the economic development of Saudi Arabia, focusing on how this nexus is affected by the country's control of corruption. The study employs the time series data from 2009 to 2022.

Methods: This paper applies the ordinary least squares (OLS) and quantile regression Hierarchical moderated regression analysis to analyze the mechanism effect of control of corruption. The augmented Dickey-Fuller (ADF) test is used to test whether a given time series is stationary or not for our interest variables.

Results: The econometric analysis indicates that TO significantly impacts Saudi Arabia's economic development, plus the country's control of corruption also influences this effect.

Conclusion: Saudi policymakers and politicians must improve the country's control of corruption, making it more capable of managing its resource wealth and exporting more goods, thereby stimulating its economic development.

Keywords: Trade Openness; Control of Corruption; Economic Development.

الملخص:

الأهداف: تهدف الدراسة الحالية إلى تأكيد أن الانفتاح التجاري (TO) يعد مصدرًا هامًا لواحدة من أهم الدول المنتجة للنفط في العالم مثل المملكة العربية السعودية. ولذلك، فإن الهدف من هذا المقال هو دراسة تأثير الانفتاح التجاري على التنمية الاقتصادية في المملكة العربية السعودية، مع التركيز على كيفية تأثر هذه العلاقة بالسيطرة على الفساد في المملكة العربية السعودية. تستخدم الدراسة بيانات السلاسل الزمنية من عام 2009 إلى عام 2022. وقد استخدمت الدراسة معدل نمو الناتج المحلي الإجمالي الحقيقي الذي يعكس النمو الاقتصادي للبلاد.

المنهجية: تم استخدام التحليل القياسي من خلال نموذج الانحدار الخطي، بالإضافة إلى نموذج الانحدار الهرمي لتحليل تأثير آلية السيطرة على الفساد على العلاقة بين الانفتاح التجاري والتنمية الاقتصادية. يتم استخدام اختبار ديكي-فولر المعزز لاختبار ما إذا كانت السلاسل الزمنية للمتغيرات المستخدمة في الدراسة ثابتة.

النتائج: تشير نتائج هذا البحث إلى أن الانفتاح التجاري له تأثير إيجابي على اقتصاد التنمية لدى المملكة العربية السعودية بالإضافة إلى أن السيطرة على الفساد تؤثر على هذه العلاقة.

الخلاصة: يجب على صناع القرار والسياسيين بالمملكة العربية السعودية تحسين سيطرة البلاد على الفساد بشكل أكبر، وذلك لجعلها أكثر قدرة على إدارة ثرواتها من الموارد الاقتصادية وأكثر فاعلية في اجتذاب رؤوس الأموال من خلال تدعيم سياسات الانفتاح التجاري التي تؤدي إلى تصدير واستيراد المزيد من السلع والخدمات، وبالتالي تحفيز تنميتها الاقتصادية.

الكلمات المفتاحية: الانفتاح التجاري؛ السيطرة على الفساد؛ اقتصاد التنمية.

1 Introduction

Better economic performance in countries at all stages of development has traditionally been linked with trade and market openness, which has opened up new choices for consumers, businesses, and employees worldwide and enabled millions to escape poverty (Ulaşan, 2015). In the long run, open economies are often better than closed economies in different aspects, such as producing products and services, spreading knowledge, and improving the total factor productivity (Barro & Sala-i-Martin, 1995; Meissner, 2014). Trade increases the benefits of foreign direct investment and makes it easier to integrate with the sources of innovation. Trade openness enables economies to reap the potential advantages of growing returns to scale and economies of specialization more fully by expanding the market size (Alesina, et al., 2000; Bond et al., 2005; Zahonogo, 2016).

Since the GCC¹ countries have higher trade openness than the global average, they have evolved into a significant international trade, finance, and economic integration (Zouheir, 2023). One of the important. One of the critical countries in the GCC region is Saudi Arabia, which accounts for 55% of GCC oil reserves, over 50% of GCC's GDP, and 75% of the total GCC population (Mason, 2014). According to the International Monetary Fund (IMF), Saudi Arabia was the fastest-growing G20 economy in 2022, with an 8.7% growth driven by solid oil sector performance. Vision 2030 for Saudi Arabia acknowledges that sustained prosperity will require a framework of policies to support economic diversification.

There has been debate in theory regarding the connection between trade openness and economic growth. While trade openness is a critical factor for improving economic development outcomes, few studies show a negative impact of globalization on economic development. (Yanikkaya, 2003) highlighted that it has adversely impacted poor countries, and (Pham, 2016) found no evidence that trade openness could benefit low-developed countries and may increase their pollution level. (Dollar, 2001) finds that economic integration can have adverse health effects through migration and travel; hence, the transmission of AIDS would increase. The link between the disease and commercial openness can be seen through exporting unhealthy food, tobacco, and alcohol. Plus, environmental pollution, which adversely affects the population's health, is seen as a result of trade openness (Lautier, 2014). Therefore, the impact of globalization varies depending on each country's circumstances.

According to the World Bank and the International Monetary Fund, one of the main factors preventing institutions from operating well is corruption, which poses a significant barrier to social and economic advancement (Gil et al., 2019). Government quality proxied by stability and low corruption rate has been considered the primary source of economic development across countries. One key element of improving globalization efficiency is the quality of government (Khan, 2017). Since smooth trade requires a high level of government quality, a high level of government efficiency facilitates the increase of international exchanges by reducing transaction costs and trade barriers (Swift, 2011). As a result, it is necessary to investigate this relationship considering the impact of various contributing components within specific economic contexts. Hence, in this regard, current research aims to explore the impact of Trade openness on the economic development of Saudi Arabia while investigating the moderating role of control of corruption in the country.

2 Literature Review

The literature presents inconsistent results regarding how trade openness investment (TO) affects the economic growth of various economies. While several works of literature (Romer & Frankel, 1999; Baldwin et al., 2005; Almeida & Fernandes, 2008) predict that globalization and trade openness increase average income, some other economists (Musila & Yiheyis, 2015; Yanikkaya, 2003) highlighted that it has adversely impacted on poor countries. Corruption in the public sector is likely one of the primary causes of governance failures, which immediately impact institutional quality and, consequently, societal well-being (Acemoglu & Verdier, 2000). Few studies find that a weak functioning legal framework can make contracts less effective, which deters foreign trade (Anderson & Marcouiller, 2002). Therefore, corruption is considered a channel that negatively affects the role of trade by increasing the direct trade cost. The following sections present the results illustrating the relationship between the interest variables of this study.

¹ The Gulf Cooperation Council brings together six Arab countries – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates – to further political and economic integration amongst them.

2.1 Trade Openness and Economic Development

According to conventional trade theory, countries can increase their openness and experience growth through increased specialization, investment in innovation, productivity improvements, or better resource allocation. The variations in the capital-labor ratios would be the only reason in the Solow and neoclassical growth models why one country is better or more prosperous. They assume that technological development is exogenous and contend that trade policies are irrelevant to economic growth (Solow, 1957). While trade liberalization promotes the spread of innovations and technology (Krueger & Berg, 2003; Lucas, 1988), the ability of a country to absorb new ideas and technology is based on its education and R&D (Verspagen, 1991; Fagerberg, 1994), financial development (Aghion et al., 2005), governance, and institutional settings at the national level (Alamoudi, 2016; Haltiwanger, 2011; McMillan & Verduzco, 2011).

Empirically, the relationship between Trade openness and economic development has mixed conclusions. While several studies have demonstrated no relationship or even a negative relationship between trade and economic development (Pam, 2016; Trejos & Barboza, 2015; Ulaşan, 2015; Gunter et al., 2005), some studies confirm a positive relationship (Fosu, 1990; Chang et al., 2009; Kim, 2011; Jouini, 2015). Previous literature is inconclusive to some extent since they use different methodologies and different proxies for trade openness and globalization. (Ulaşan, 2015) concluded that trade openness measures are not robustly significantly associated with economic development proxied by economic growth using a dynamic panel data framework. In the case of African countries, (Fosu, 1990) argued that increased exports enhance economic development since it can boost intra-industry trade by facilitating a country's integration into the global economy and lessening the adverse effects of external shocks on the domestic economy. (Trejos & Barboza, 2015) used dynamic empirical data to demonstrate that trade openness is not the primary cause of Asian economic development. Several studies suggest that trade openness alone does not boost economic development, especially in developing countries that suffer from weak governance quality and low rates of infrastructure (Gunter et al., 2005) conclude that any gains from trade liberalization are often linked with country circumstances in term governance quality and different external effects.

2.2 Trade Openness and Corruption

Literature investigating the relationship between corruption and trade has yielded different results. (Torrez, 2002) investigates the association between trade and corruption. The analysis demonstrates a negative association for most empirical data, although not robust. (Akbarian & Shirazi, 2012) Analyze how trade volume is affected by corruption in the Middle East and Latin America using the fixed effects vector decomposition method. The findings demonstrated that trade is an inverted U-shaped function of corruption, with a small degree of corruption initially assisting in an increase in trade volume in both regions. However, trade volume declines in the studied countries after reaching this threshold. Furthermore, the findings showed that corruption in the importing country adversely impacts the trade volume between the countries under study and may even decrease bilateral trade. Also, A few studies (Dutt & Traca, 2010; Voraveeravong, 2013) reveal an unclear or even positive effect. Trade and corruption are likely positively correlated in an environment with solid trade barriers and weak institutions.

The following literature has consistently shown that corruption hurts global trade. According to (Suzuki, 2013), the amount of commerce and imports from the E.U. between 1984 and 2009 decreased corruption in African countries. (Silviano et al., 2022) Re-examines how corruption affects trade internationally, considering intra- and inter-national flows and keeping up with the most recent developments in the gravity equation literature by utilizing a large sample of countries from 1995 to 2017. They find that corruption is negatively associated with trade in developing countries. (Yarbrough & Yarbrough, 1990) examines the role of trade agreements between economic integration and governance. By offering organizational structure, preferential trade agreements might lessen opportunistic behavior.

2.3 Economic Development and Corruption

Three dominant viewpoints frequently expressed in the literature explained the natural relationship between corruption and economic growth. (Mo, 2001) investigates the relationship between corruption and economic growth based on international data from 1970 to 1985 and finds that corruption indirectly impedes economic growth by directly causing a fall in investment, human capital, and political instability. (Mauro, 1995) utilizes data from 58 countries to assess such a relationship, and the outcome demonstrates that corruption significantly

hinders GDP growth and investment. Corruption impacts trade and investment policy, which impedes economic prosperity (Pellegrini & Gerlaph, 2004; Imam & Jacobs, 2014; Ivanyina et al., 2016).

The second dominant considers corruption a key efficiency factor based on the Auction model (Beck & Mayer, 1986). The idea of this model is that businesses are more likely to be efficient if they can afford to pay large bribes. As a result, the operating rights of auction acquisition will enhance market efficiency. (Dzhumashev, 2014) finds that corruption is strongly related to improving economic growth and better market efficiency as government size is above the threshold. While state-owned firms' profitability is unaffected by regional corruption, private enterprises' profitability is positively impacted in the case of China country (Jiang & Nie, 2014).

The third point of view is that corruption varies according to environmental circumstances. Corrupt practices can be advantageous or detrimental depending on the system and context in which they are found. (Zheng, 2015) concludes that in some cases, a certain amount of corruption may benefit society and that, in contrast to lower-ability officials, competent officials may be less motivated to work against corruption.

2.4 Control of Corruption in Saudi Arabia

This study uses the index of control of corruption, which captures perceptions of the extent to which public power is exercised for private gain, including petty and grand forms of corruption and the capture of the state by elites and private interests (Global Economy, 2024). Saudi Arabia's score over that time ranged from a minimum of -0.31 points in 2011 to a top of 0.36 points in 2022, as shown in (Figure.1), with an average of 0.01 points.

According to (Bertelsmann Stiftung, 2018), bribery has spread throughout the nation due to growing living expenses and stagnating wages. According to a National Anticorruption Commission (Nazaha²) report, bribery is the second most prevalent type of corruption in the Saudi government services sector, after Wasta³ nepotism. (Anderson, 2016). The importance of this study can be seen by focusing on one of the important indexes of control of corruption in Saudi Arabia. This index is seen as a key finding in that it enables countries to have a high level of trade openness to have control over their destiny by shaping policies that are likely to be most effective in improving their economic development.

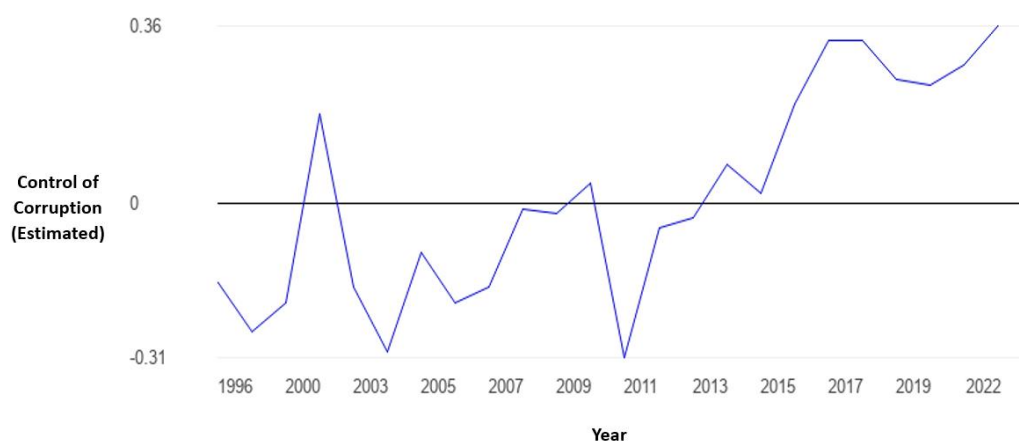


Figure 1: Control of Corruption of Saudi Arabia (Control of Corruption index; -2.5 weak; 2.5 strong) Source: <https://www.theglobaleconomy.com>

Figure 2 shows trade openness's direct and indirect effects on economic growth. Trade openness and globalization could affect the economic development of a country directly through the inflow of goods and services. It indicates that the indirect effect has two channels: social and other economic factors, such as human capital transformation. The second channel of government quality is proxied by control of corruption, which is

² "Nazaha" which is an Arabic word meaning "integrity". Nazaha aims to create a work environment of integrity, transparency, honesty, justice and equality in the bodies that fall within its jurisdiction. Nazaha was established during the period of King Abdullah bin Abdulaziz Al Saud on 18 March 2011. It reports only to the King. The functions of Nazaha to encompass all public sectors with no exceptions and the competence of Nazaha to combat financial and administrative corruption.

³ Wasta is the use of "connections" to find jobs and obtain public services, licenses or permits that would otherwise be out of reach or would take time or effort to obtain.

the main interest of this variable. Better and adequate government quality proxied by anticorruption can create better investment circumstances for a host country to attract more capital and stimulate economic growth (Xiujie & Weihua, 2021). Therefore, current research suggests the following hypothesis:

H0: Control of corruption moderates the relationship between trade openness and the economic growth of Saudi Arabia.

H1: Control of corruption does not moderate the relationship between trade openness and the economic growth of Saudi Arabia.

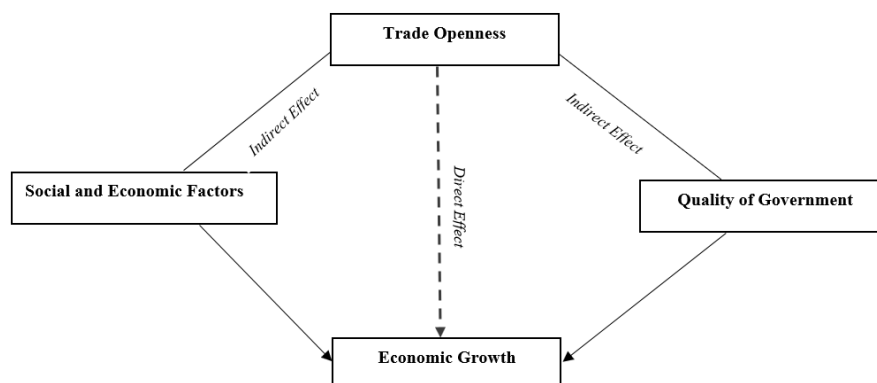


Figure 2: Direct and Indirect effect of Trade Openness on Economic Growth:

3 Data Analysis and Results

Most macroeconomic factors that affect trade openness are impacted by dynamic social, political, and economic contexts rather than being isolated or stable. This study assumes that there is a positive relationship between trade openness and economic development in the case of Saudi Arabia. It applies a common technique for estimating coefficients of linear regression equations of Ordinary Least Squares regression (OLS) to measure the impact of those variables. Such a relationship between these two-trade openness and economic development would be more robust under a high level of control of corruption. Therefore, the time series technique is used in this study to investigate the relationship of trade openness with real GDP growth to proxy for economic development and the moderating effect of control of corruption. This section consists of the following: descriptive statistics for the variables used in this study, Unit Root Test, Regression Analysis, and Hierarchical Regression Analysis.

3.1 Descriptive Statistics

Table 1 provides the descriptive statistics for all variables used in this study. Some essential and exciting facts need to be highlighted in Table 1. On average, the control of corruption in our sample has been estimated at .13 over the entire period from 2009 to 2022. The result also shows that the trade percentage as % of GDP has an average of 70.2 and was at its highest peak of 85 in 2009. This study uses control variables to capture other macro and demographic factors essential in determining economic growth in Saud Arabia by adding human capital, investment, oil rents, and government expenditure as % of GDP.

Table 1: Descriptive Statistics

Variables	Mean	S.D.	Min	Max
GDP Growth	3.25	3.97	-4.3	11
Trade Openness % GDP ⁴	70.21	12.29	50	85
Control of Corruption	.139	.157	-.027	.356
Control Variables				
Education Enrollment	14.94	.033	14.87	15.00
Investment % GDP	28.64	3.60	25	34
Oil Rent % GDP	31.23	10.87	16	49.2
Government Expenditure % GDP	28.45	3.60	23	33.4

Source: Author calculation

⁴ Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product (World Bank Data).

3.2 ADF Test

In time series analysis, the assumption of stationary data is one of the essential statistical properties that ensures the time series does not change over time. In this regard, this study applied *the ADF test*, which is used to check the stationarity of a time series, and it checks for the presence of a unit root in the data. Table 2 presents the results of the ADF test. The result indicates that the series is stationary in the first differences.

Table 2: ADF (unit root) test results with trend and intercept

Variable	1 st Difference	Lagged
GDP Growth	S	1
Trade Openness % GDP ⁵	S	1
Control of Corruption	S	1

Source: Author calculation based on the calculation.

3.3 Results of Regression Analysis

The OLS estimation results are provided in Table 3 to see the magnitude of the impact of trade on economic growth. The estimation results point out stable coefficients. More importantly, the Durbin Watson has a value of 2.24, indicating no autocorrelation detected in the sample. The coefficient associated with trade is highly significant in explaining the variation in Saudi economic growth. The coefficient is statistically significant at 1% ($\beta = .29$, S.E = .01). The results also show a positive relationship between trade openness and economic growth. It indicates that, on average, an increase in Saudi trade volume by 1 US dollar is associated with a 29.01-cent improvement in Saudi Arabia's GDP.

Table 3: The OLS Estimation Results of Population Health

Variable	Coefficient
Trade	.291 (.015) ***
Constant	3.563 (.016) ***
Control Variables	Yes
F- test	82.93
R ²	0.828
Adjusted R ²	0.731
Durbin Watson	2.24

Note: 1- The dependent variable is GDP growth.

2- The F test has normal distribution N (0,1) and tests the null hypothesis of insignificance of the estimated parameters, against the alternative hypothesis of significance of the estimated parameters.

3- *** and *denote significance at 1 and 10 % level of significance, respectively.

4- The figure in parenthesis below the coefficient estimates is standard error.

3.4 Results of Hierarchical Regression Analysis

This study introduced hierarchical regression analysis to investigate the moderating effect of controlling corruption on the relationship between trade and economic growth. The findings provide evidence that the coefficient of trade openness is significant in explaining the variation of the average growth of Saudi Arabia. The coefficient associated with the control of corruption in the second model suggests how important the government's quality, which has been considered the primary source of economic development across countries. However, the results reported in column 3 of the interaction term indicate that corruption control in Saudi Arabia negatively affects the relationship between trade openness and GDP.

⁵ Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product (World Bank Data).

Table 4: The OLS Estimation Results of Moderating Effect

Variable	Basic Model	Moderated	Interaction
Trade	.291 (.015) ***	.265 (.020) ***	.259 (.015) ***
Control of Corruption (COC)		.016 (.009) *	.145 (.017)
Trade * COC			-.005 (.001)**
Constant	3.563 (.016) ***	2.590 (.118) ***	2.490 (.095) ***
Control Variables	Yes	Yes	Yes
F- test	82.93	73.66	75.94
R ²	0.828	0.590	0.771
Adjusted R ²	0.731	0.551	0.725
Durbin Watson	2.24	2.29	2.24

Note: 1- The dependent variable is GDP growth.

2- The F test has normal distribution N (0,1) and tests the null hypothesis of insignificance of the estimated parameters, against the alternative hypothesis of significance of the estimated parameters.

3- *** and * denote significance at 1 and 10 % level of significance, respectively.

4- The figure in parenthesis below the coefficient estimates is standard error.

4 Conclusion

The empirical literature on the growth benefits of trade openness has been largely indecisive. While some researchers concluded that growth benefits are linked with trade openness, another study tends to find no or limited effects associated with TO. This paper has examined how TO affects the growth development of Saudi Arabia over the period from 2009 to 2022 using different estimation techniques. The contribution of this study is to extend such a relationship by investigating how the control of corruption plays a vital role in affecting the relationship between trade openness and economic growth. Since smooth trade requires a high level of government quality, a high level of government efficiency facilitates the increase of international exchanges by reducing transaction costs and trade barriers, thereby enhancing economic development. The main essential conclusions of the current study go along with the theoretical point of view of (Acemoglu & Verdier, 2000; Mauro, 1995) by confirming that corruption is one of the primary causes of governance failures, which directly impact institutional quality and, consequently, societal well-being. This study finds that control of corruption is a more effective tool to improve economic development, especially the economic growth of Saudi Arabia, by facilitating the inflow of products and services.

The Saudi government should fight corruption by controlling it to ease goods and services that benefit the country's economic development in different sectors. In order to take advantage of free market prices, which, in the long term, stimulate productivity and competitiveness among utility companies and open the door to investment and diversification of the energy mix in the Kingdom, decision-makers in Saudi Arabia have to concentrate on combatting corruption to modernize and create a thriving economy that is attractive to investors. A country that can control its corruption can attract more openness in terms of trade. Therefore, the institutional quality of the government proxied by control of corruption is a crucial indicator that helps to improve trade openness in Saudi Arabia.

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