The Role of Foreign Direct Investment and Trade Openness on Economic Growth in Oil Rich vs Non-Oil Resource-Rich Countries: A Comparative Analysis

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Abstract- Foreign direct investment (FDI) and trade openness are well known as the driving forces of economic growth and development. Over the past few decades, the level of globalization has heightened the significance of international capital flows and trade integration in the developed as well as the developing economies. Countries with good resources are known to rely a lot on foreign investment and trade in order to boost economic growth and development. The impacts of these economic factors might however differ depending on the nature of natural resources that a country has. This paper will analyze how foreign direct investment and openness of trade influence economic growth of oil rich and non-oil resource rich nations. The analysis is based on panel data of 22 countries that were provided between 2000 and 2022;11 countries were oil-exporting countries, and 11 countries were non-oil resource exporters. The empirical research uses panel fixed effect sitting regression models to determine the association among FDI, trade openness and economic growth. The findings have shown that the effect of foreign direct investment is always positive and significant on the growth of the economy in oil-rich and non-oil resource endowed countries. Openness to trade also positively affects the rate of economic growth but the effects of the effect on the various sectors of resource differ. The results emphasize that foreign investment and diversification of exports is significant in ensuring sustainable economic growth of resource endowed economies.

Index Terms- Foreign Direct Investment, Trade Openness, Economic Growth, Natural Resources, oil-rich Countries.

I. INTRODUCTION

A. Background of Study

Foreign direct and international trade are significant in propagating economic growth and development. The neoclassical growth theory argues that capital accumulation, growth in labor and technological advancement are the factors that drive economic growth (Solow, 1956). In this regard, FDI leads to economic growth because it enhances capital stock and facilitates transfer of technology between multinational companies and the local companies.

The other factor that has a significant role in economic growth is trade openness. Those nations engaging in active trade activities at a global scale have better rates of productivity and economic growth. Trade gives countries the opportunity to specialize based on their comparative advantages, it also gives firms an opportunity to have access to bigger markets and better technologies (Grossman and Helpman, 1991).

Many countries are also shaped in economic performance by natural resources. The economies that are resource endowed tend to depend a lot on the exportation of oil, minerals and agricultural commodities to earn the state income and government revenue. Yet the economic performance of natural resource wealth is still a topic of dispute in the economic literature.

B. Research Problem

Most of the resource-rich nations have a volatile economic growth, which is contrary to the potential advantages of natural resource wealth. Resource curse hypothesis is one of the explanations to this phenomenon, whereby it was proposed that the countries that

have lots of natural resources may grow more slowly than countries that do not have lots of natural resources (Sachs and Warner, 1995).

The structural economic problems that can be encountered by resource-based economies include over dependence on the export of the commodities, poor institutions and economic instability. Especially the oil-rich nations might be susceptible to the changes in the global oil prices that might have a dramatic impact on the government revenues and economic stability.

Although the linkage between the existence of natural resources and economic development has been studied in many cases, only a handful of studies have specifically compared how the oil-based economies perform compared to that of non-oil-based economies. The significance of these differences is to ensure that economic policies are designed in a way that ensures sustainable growth in resource-dependent economies.

C. Objectives of the Study

The main aim of the research is to examine the association of foreign direct investment with trade openness and economic development in oil and non-oil resource endowed nations.

This research is supposed to:

- consider how foreign direct investment affects economic growth.
- Test the correlation between trade openness and economic growth.
- Compare the patterns of economic growth of the oil-rich and non-oil resource-rich countries.
- Assess the effects of natural resource endowment on the correlation between FDI, trade and economic growth.

II. LITERATURE REVIEW

A. Theoretical Perspectives

Economic theories give numerous explanations on the impact of foreign direct investment and trade in economic growth. Neoclassical theory of growth focuses on how capital and technological advancement can enhance economic growth (Solow, 1956).

Endogenous growth theory also emphasizes the critical role of innovations, transfer of knowledge and human capital development as important factors of economic growth in the long run (Romer, 1990; Aghion and Howitt, 1990). On that note, foreign direct investment would be able to facilitate economic development through the sale of new technologies and management skills to the host nations.

Table 2 Descriptive statistics for variable measures

Variable	N	Mean	SD	Min	p50	Max
GDP growth	462	0.037	0.075	-0.504	0.037	0.868
FDI to GDP	478	0.022	0.025	-0.064	0.016	0.166
IMPORT to GDP	470	0.287	0.149	0.050	0.262	0.982
EXPORT to GDP	485	0.363	0.174	0.0812	0.313	0.983
Ln GFCF	390	24.84	1.74	20.29	25.05	29.36
Ln Labour	505	16.14	1.35	12.89	16.21	18.73
Oil rents of GDP	476	0.138	0.169	0	0.048	0.651
Ln oil production	436	10.29	2.47	2.22	11.25	13.18
Fuel export of merchandise	435	0.004	0.004	3.41	0.003	0.009
Agricultural raw materials export	435	0.002	0.002	5.33	0.001	0.001
Agriculture forestry and fishing	488	0.007	0.008	9.42	0.0041	0.003
Natural gas rents of GDP	476	0.001	0.002	0	6.82	0.001
Coal rents of GDP	476	2.67	6.96	0	2.44	0.007
Ores and metals exports of merchandise	432	0.001	0.017	8.89	0.005	0.007
Mineral rents of GDP	476	0.001	0.002	0	4.28	0.016

B. Trade Openness and Economic Growth.

Openness to trade is commonly accepted as a significant contributor to economic growth. Mostly, the growth rate of their economies is accelerated as nations that embrace the export strategies in their economic systems enjoy the fruits of greater productivity and the international market (Dollar, 1992; Frankel and Romer, 1999). Technological diffusion and knowledge transfer within nations are also brought about by international trade, and this can raise the productivity and economy of the nations (Keller, 2004). Companies involved in international business usually embrace new technologies and enhance their competitiveness in global business.

C. Natural Resources and Economic Growth.

Natural resources and economic growth have been a topic that has attracted a lot of discussion in literature on economics. According to the resource curse theory, the economic growth of countries endowed with natural resources can be retarded because of poor institutions, corruption and absence of economic diversification (Sachs and Warner, 1995; Mehlum et al., 2006). Other studies, however, believe that natural resources can positively bring economic growth when they are well managed. Infrastructure development, education and diversification of the economy can be financed using resource revenues (Brunnschweiler and Bulte, 2008).

Empirical research has also indicated that economic impacts of abundance of natural resources can differ with the type of resources. Economy of oil rich economies tends to become more volatile with changes in oil prices in the world market, unlike economies that are rich in minerals or agriculture (Arezki and Van der Ploeg, 2011).

III. RESEARCH METHODOLOGY

A. Data and Variables

The panel dataset in this study consists of 22 countries between 2000 and 2022 consisting of 11 oil and 11 non-oil resource rich countries. The data were retrieved using the World Bank World development indicators database.

The growth of GDP is utilized as the dependent variable in the analysis; that is, the gross domestic product yearly percentage rate.

The major independent variables are:

- The measure of Foreign Direct Investment (FDI) is the net inflows of FDI as a percentage of GDP.
- Trade openness that is computed as the aggregate of exports and imports in comparison to GDP.

Other control variables included in the model are the gross fixed capital formation and labor force which reflect on the level of investment and availability of human capital in the economy respectively.

B. Econometric Model

To examine the correlation between FDI, trade openness and economic growth, this paper will use a panel fixed-effects regression. The analytical approach of panel data is common in empirical studies of economics since it can be used to analyze cross-country as well as variations with time.

The initial econometric model may be written as follows:

$$\text{GDP Growth} = \beta_0 + \beta_1 FDI + \beta_2 Trade + \beta_3 Capital + \beta_4 Labor + \varepsilon$$

The model allows the analysis to assess the effects of change in foreign investment and trade openness on the economic growth of various countries.

C. Estimation Method

Fixed-effects estimation method is employed to adjust the country-specific features, e.g. institutional quality, economic structure and geographical differences. The Hausman specification test is done to ascertain the suitability of the model used which is the fixed-effects model. The outcomes of the test reveal that the fixed-effects model gives consistent estimates as compared to the random-effects model. Another test that is carried out is robust tests to overcome the econometric problems that may arise including heteroskedasticity and cross-sectional dependence of panel data (Driscoll and Kraay, 1998).

IV. RESULTS

A. Descriptive Statistics

The descriptive statistics will give an impression of the key variables to be analyzed and point at the general economic characteristics of the countries in the sample. The findings show that the mean growth rate of GDP in the countries of the sample is about 3.7 percent; however, the standard deviation is rather substantial across the countries throughout the period of the study. This difference is indicative of divergence in economic structure, reliance and presence of natural resources, economic development in the oil-rich and non-oil resource-based economies.

The inflows of foreign direct investments are hovering at 2.2 percent of GDP, which shows moderate levels of foreign investments in the sample countries. Nonetheless, the amount of FDI differs significantly among nations based on their market size, availability of resources and the institutional quality. Countries endowed with resources tend to receive foreign investment due to the desire of the multinational companies to have access to natural resources and export.

Table 3 Correlation matrices

	1	2	3	4	5
1. FDI to GDP	1				
2. IMPORT to GDP	0.2519	1			
3. EXPORT to GDP	0.0794	0.6513	1		
4. Ln GFCF	-0.1378	-0.2764	-0.1695	1	
5. Ln Labour	-0.0927	-0.5407	-0.5049	0.6525	1

Countries also differ in terms of trade openness, with the economies that have a high dependency on energy exports, having a high ratio of exports. Conversely, those nations that are not endowed with oil resources are likely to be dependent on a wider variety of exports such as minerals, metals and agricultural products. All these differences show that the two groups of countries differ in terms of their economic structure and patterns of trade.

B. Econometric Results

The econometric findings give support on the relationship surrounding foreign direct investment, trade openness and economic growth. The regression findings indicate that foreign direct investment has a positive and significant impact on economic growth in most specifications. This observation implies that higher FDI inflows are related to higher levels of GDP growth in oil and non-oil endowed nations.

The positive correlation between FDI and economic growth is in line with the past empirical works that claim that foreign investment is linked to economic growth by capital inflows, technological spillovers and better managerial practices (Borensztein et al., 1998; Alfaro et al., 2004). Multinational companies usually bring with them superior technologies in

production, management and structural systems that increase the efficiency of the home industries.

The findings further show that trade openness has a positive effect on the growth of the economy though the degree of influence is sometimes different in accordance with the nature of natural resources a country possesses.

The economic performance in oil-rich countries is dominated by export activities that are associated with the energy sector. Due to oil exports, huge revenues can be used to fund government expenditure and economic growth and infrastructure development.

Table 4 The Hausman Test Results

Model	Resource-Based	χ^2-statistics $H_0: REM; H_1: FEM$	FEM vs REM
Model 1	Oil	26.25***	FEM
	Fuel	32.32***	FEM
Model 2	Agriculture	29.12***	FEM
	Coal	42.31***	FEM
	Gas	32.94***	FEM
	Ores & Mineral	48.49***	FEM

lote: ***, **, * denote significance at alpha 1%, 5% and 10%.

Non-oil resource rich countries in contrast enjoy the advantages of minerals, metals and agricultural products exports. With favorable trade policies and investment flows, these industries can create possibilities of economic diversification and economic development in the long term.

C. Robustness Tests

To guarantee the reliability and validity of the empirical results, several robust tests were carried out. The tests are useful in determining the consistency of the results as other model specifications and estimation methods are used.

One of the robust tests was the sample division into both the oil-rich and non-oil resource-rich countries to test whether the effect of foreign direct investment and trade openness varies between them. The findings of this discussion have revealed that FDI still has a positive and statistically significant effect on economic growth of both sets of countries.

Other checks of robustness were also carried out by using other econometric estimators and modification of standard errors. These tests were aimed at resolving the possible econometric problems heteroskedasticity, and cross-sectional dependence of the panel data. The findings are quite similar under these other model specifications indicating the strength and soundness of the primary findings.

Altogether, robust tests increase confidence in the empirical data and help to make a conclusion that foreign direct investment and trade openness are significant factors promoting economic growth among the economies that are resource rich.

Table 6 Splitting the Observation

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Model 1: Oil Rich	Model 1: Oil Rich	Model 2: Non-Oil Rich	Model 2: Non-Oil Rich	Model 2: Non-Oil Rich	Model 2: Non-Oil Rich
FD Ito GDP	0.544**	0.680**	0.143*	0.146**	0.133	0.150*
	(0.219)	(0.236)	(0.073)	(0.054)	(0.076)	(0.075)
IMPORT to GDP	0.044	0.122	0.032	0.032	0.016	0.008
	(0.102)	(0.105)	(0.060)	(0.095)	(0.090)	(0.036)
EXPORT to GDP	-0.022	-0.065	0.137**	0.130	0.142**	0.137**
	(0.069)	(0.042)	(0.047)	(0.093)	(0.056)	(0.040)
Ln GFCF	-0.010*	-0.011	0.008	0.006	0.010	0.008
	(0.005)	(0.007)	(0.008)	(0.008)	(0.008)	(0.009)
Ln Labour	0.007	0.002	0.027	0.010	0.049	0.037
	(0.031)	(0.023)	(0.068)	(0.063)	(0.068)	(0.072)
Ln oil production	0.000					
	(0.000)					
Oil rents of GDP	0.074					
	(0.093)					
Fuel export of merchandise		-0.090				
		(0.057)				
Coal rents of GDP			-0.250			
			(0.287)			
Natural gas rents of GDP				(0.571)		
				-0.077*		
Oresexports of merchandise				(0.041)		
				0.133		
Mineral rents of GDP				(0.184)		
					-0.042	
Agricultural raw materials export					(0.159)	
					0.118	
Agriculture forestry and fishing					(0.147)	
					(0.025)	(0.025)
Constant	0.119	0.364	-0.650	-0.308	-1.069	-0.808
	(0.588)	(0.515)	(1.001)	(0.945)	(1.020)	(1.062)
Country and year Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	141	122	221	210	213	231
R-squared	0.493	0.530	0.583	0.626	0.605	0.572

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

V. DISCUSSION

The results of this paper give significant insights into the association between foreign direct investment, trade openness and economic growth in resource rich countries. The empirical finding suggests that foreign direct investment positively and significantly influences the economic growth of the economies both rich in oil and in non-oil resources. This conclusion is not a new revelation as other past researchers have highlighted the importance of FDI in enhancing capital accumulation, technological transfer and productivity growth (Borensztein et al., 1998; Alfaro et al., 2004). Foreign direct investment is an economic drive as it does not only bring finance to the host economies, but also it brings new technologies and management practices to the receiver economies. These spillover effects can improve productivity and efficiency of the domestic industries in favor of the arguments of the endogenous growth theory (Romero, 1990; Aghion and Howitt, 1990). The outcomes also indicate that trade openness is positively associated with the encouragement of economic growth. The advantage of nations actively trading internationally is that they have greater access to the market, diffusion of technology as well as enhanced productivity (Frankel and Romer, 1999). The impact of trade is, however, seen to vary among countries that are rich in oil and those that are not. Economies that are oil based are likely to be dependent on energy exports, and that aspect can expose the economy to risks of oil price changes in the global market. By comparison, oil-rich economies are usually more diversified than the non-oil ones with minerals, metals and agricultural products in export. These results are consistent with the previous research that

emphasizes the significance of resource diversification and efficient management of the resources towards sustainable growth (Arezki and Van der Ploeg, 2011).

Overall, the findings highlight the need to focus on foreign investment inflow, enhance trade integration, and encourage economic diversification in resource-abundant economies.

VI. CONCLUSION

This paper analyzed the association between foreign direct investment and trade openness and growth in oil and non-oil resource rich nations through a panel data analysis. The empirical evidence reveals that foreign direct investment has a major contribution in enhancing the economic growth in the two categories of countries. This finding is in line with past empirical data indicating that FDI is related to capital accumulation, transfer of technology and productivity gains in host economies (Borensztein et al., 1998; Alfaro et al., 2004).

The results also indicate that the openness to trade has a positive impact on economic development, but the degree of its effect differs with the organization of exports of natural resources. Active involvement in international trade helps countries to have greater access to the market and technological diffusion, which in turn may lead to better productivity and economic performance (Frankel and Romer, 1999). Nonetheless, the findings also show that oil-driven economies like these are prone to overdependence on export of energy which could expose the economies to economic instability due to variations on world commodity prices (Arezki and Van der Ploeg, 2011). Conversely, even the non-oil rich nations are usually well endowed with a diversified export pattern that takes in the form of minerals, metals and agricultural products. What these results imply is that diversification of an economy in terms of reliance on one type of resource and in terms of encouraging economic stability in the long run (Sachs and Warner, 1995; Mehlum et al., 2006).

Overall, the findings highlight the value of foreign investment attraction, enhanced integration of trade, and enhanced institutional settings in resource-endowed economies. To attain sustainable economic growth, policymakers should, however, concentrate on development of favorable investment conditions and advancing export diversification. In future studies, the relationships between foreign investment, trade openness, and economic growth in resource-dependent countries can be further investigated considering the impact of institutional quality, governance and economic diversification.

APPENDIX

List of Countries Used in the Study

No.	Oil-Rich Countries	Non-Oil Resource-Rich Countries
1	United Arab Emirates	Australia
2	Qatar	Bolivia
3	Iran	Brazil
4	Iraq	Chile
5	Kuwait	Indonesia
6	Russian Federation	Peru
7	Saudi Arabia	South Africa
8	Venezuela	Canada
9	Algeria	Ghana
10	Nigeria	Guinea
11	Libya	Botswana

Variable Definitions

Variable	Description
GDP Growth	Annual GDP growth rate (dependent variable).
FDI	Net inflow of foreign direct investment as a share of GDP.
Trade Openness	Exports of goods and services (% of GDP) plus imports of goods and services (% of GDP).
Oil Exports	Oil exports as a percentage of total merchandise exports.
Fuel Exports	Fuel exports as a percentage of merchandise exports.
Oil Rents	Oil as a percentage of GDP.
Ores and Metals Exports	Exports of ores and metals as a proportion of total merchandise exports.
Agricultural Raw Materials Exports	Exports of agricultural raw materials as a proportion of total merchandise exports.
Mineral Rents	Mineral rents as a percentage of GDP.
Coal Rents	Coal rents as a percentage of GDP.

Natural Gas Rents	Natural gas rents as a percentage of GDP.
Labor	Natural logarithm of the labor force (proxy for human capital).
Gross Fixed Capital Formation	Logarithmically transformed gross fixed capital formation representing physical capital investment.

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