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**AGRICULTURAL PERFORMANCE OF OIL-DEPENDENT ECONOMIES***ROLNICTWO W PAŃSTWACH UZALEŻNIONYCH EKONOMICZNIE OD ROPY NAFTOWEJ***Key words:** oil market, agricultural sector, food export*Słowa kluczowe:* rynek ropy naftowej, sektor rolny, eksport artykułów rolno-spożywczych*JEL codes:* O13, Q02, Q10, Q32

**Abstract.** The aim of the paper is to present the agricultural performance of oil-dependent economies. Based on oil rents as a share of GDP ratio, twenty of the most oil-dependent countries are selected. It is shown that food exports constitute a tiny part of total merchandise exports. It concerns all selected countries apart from Ecuador and Norway. Moreover, agriculture value added is a minor component of GDP for the majority of selected oil-dependent economies. Chad and Nigeria are distinguished by the highest agricultural value added to GDP ratio. Qatar, Kuwait and the United Arab Emirates, on the other hand, are among countries in which the ratio is lower than 1%. Many oil-dependent countries have neglected the rural economy since oil discovery. The agricultural sector is largely ignored in favour of the oil and gas industry. However, it should be emphasized that although agriculture constitutes only a minor share of GDP, in many oil-dependent developing countries, the agricultural sector still provides the main livelihood for most people.

**Introduction**

Many researchers claim that natural resource dependent economies have a tendency to develop slower than resource-poor ones [Sachs, Warner 1995, Leite, Weidmann 1999, Gylfason et al. 1999, Auty 2001, Manzano, Rigobon 2001, among others]. Thorvaldur Gylfason [2001] and Thorvaldur Gylfason and Gylfi Zoega [2006] show that natural resources may bring negative effects on a country's economic policies, human capital, level of savings and investments. This phenomenon is generally called the natural resource curse.

Literature provides two major branches that explain the natural resource curse [Badeeb et al. 2017]. The first one is focused on economic explanations like the Dutch disease, long-term trends in world prices, price volatility, crowding out of manufacturing, failures of economic policies and negligence in education [Van der Ploeg, Poelhekke 2009, Frankel 2010]. The second one is focused on political explanations like rent seeking, weak institutions and corruption [Iimi 2007, Eregha, Mesagan 2016]. The Dutch disease is believed to be one of the most significant triggers for the natural resource curse. The phenomenon occurs when the price boom in the natural resource market leads to an increase in domestic income, money supply, demand for goods and, finally, brings about high inflation and appreciation of real currency. Consequently, higher domestic prices and a stronger home currency make the country's export of non-resource goods less competitive. It hampers both non-resource manufacturing and agricultural sectors from developing. This adverse effect is called "the spending effect" [Corden, Neary 1982]. Another negative result that squeezes non-resource manufacturing and agricultural sectors is called the "pull effect" [Badeeb et al. 2017]. The "pull effect" is associated with the situation when a natural resources boom leads to an increase in domestic input prices and, consequently, generates a rise in the production cost of other non-resource sectors such as manufacturing and agriculture.

The aim of the study is to demonstrate agricultural performance among the twenty most oildependent economies in the world. The paper is organised as follows. Section 2 is focused

on methods and data applied in the study. Section 3 presents the agricultural performance of the countries that are highly dependent on oil production. The chosen measures of a country's oil dependence are calculated and presented. Furthermore, the oil sector is compared to the agricultural sector for selected oil-dependent economies. Section 4 summarizes and concludes.

### Research material and methodology

Oil dependence is defined as a degree to which a country's economic performance is determined by oil revenues. Literature provides several different methods to measure a country's natural resource dependence. The paper applies rents from oil over the gross domestic product (GDP) ratio and share of fuel export in the total merchandise export for measuring a country's oil dependence. Oil rents are the difference between the value of crude oil production and total cost of production. Merchandise export is the country's value of goods provided to the rest of the world. Based on oil rents as a share of GDP ratio, twenty of the most oil-dependent countries are selected. Further analysis of agricultural performance is only conducted for these countries.

The agricultural performance of selected countries is depicted on the ground of food exports as a percentage of merchandise exports, agricultural land as a percentage of total land area, employment in agriculture and agriculture value added as a percentage of GDP ratios. Agriculture corresponds to ISIC divisions 1-5 and embraces forestry, hunting, fishing, and the cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. Applied data are obtained from the World Bank and OPEC Annual Statistical Bulletin, and cover the period from 2000 till 2016.

### Research results

The aim of the study is to present agricultural performance for the most oil dependent economies. The first part of the research involves the selection of oil-dependent countries based on oil rents as a share of GDP ratio. Figure 1 presents the ratio for twenty countries that relied most heavily on oil in 2000, 2008 and 2016. For the majority of presented countries, oil dependency in 2016 has diminished in comparison to 2008 and 2000. It may result from a large oil price decrease in the period between 2015 and 2016. The World Bank data for 2016 depicts Kuwait, Iraq and Saudi Arabia as the three economies that rely most heavily on oil (fig. 1).

The presented countries are driven mainly by their oil sector (fig. 1). Oil production and supporting activities contribute most to the countries' revenues. Another measure that can be applied to assess a country's oil dependence is the share of fuel export in total merchandise export. According to Paul Stevens and Evelyn Dietsche [2008], the country is highly natural resource dependent when merchandise fuel and mineral exports exceed 30% of total export.

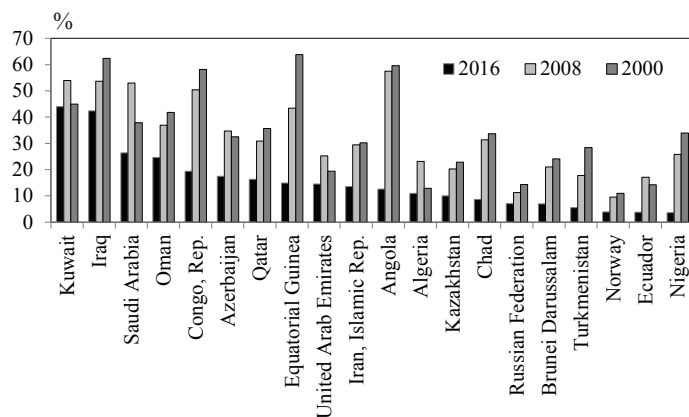


Figure 1. Oil rents as a share of GDP in 2000, 2008 and 2016

Source: own elaboration based on the World Bank database

Figure 2. Fuel exports as a share of merchandise exports in 2000, 2008 and 2016

Source: own elaboration based on the World Bank database

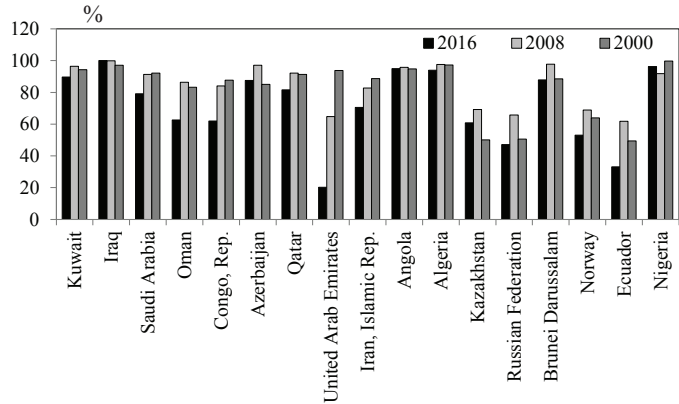


Figure 2 presents country dependency on the export of fuel commodities in 2000, 2008 and 2016. Fuel embraces oil, natural gas and coal. Due to data limitations, figure 2 does not embrace Equatorial Guinea, Chad or Turkmenistan.

It should be stressed that fuel exports accounted for more than 60% of total merchandise exports in all presented countries, in 2008 (fig. 2). The situation changed after the huge oil price decrease in 2015-2016. Figure 2 shows that in 2016 a share of fuel exports in total merchandise exports declined substantially. However, even in 2016, fuel exports accounted for more than 60% in sixteen out of twenty presented countries. The United Arab Emirates is a good example of a country, where the ratio decreased from 93% in 2000 to 20% in 2016. This is a depiction of successful economic diversification.

Oil-rich countries generate high incomes from the oil sector and very often do not have sufficient incentives to develop non-oil sectors by investing in new technology, innovative programmes, higher education etc. However, serious problems occur when there is a huge drop in oil prices and oil revenues decrease. It mainly concerns oil producers whose revenues overwhelmingly rely on the oil sector. Therefore, one of the main targets of the most oil-dependent countries is economic diversification. They strive to develop the non-oil sector and lower oil financial dependency. They aim to achieve a stable and relatively high level of income that is not so sensitive to oil price changes. They would like to create job opportunities for the country's labour force. However, there are only a few examples of successful economic diversification and proper economic policy implementation that make a country less sensitive to oil price

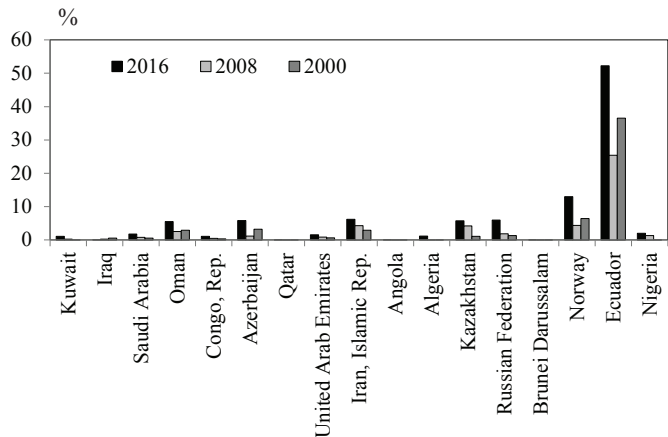


Figure 3. Food exports as a percentage of merchandise exports in 2000, 2008 and 2016

Source: own elaboration based on the World Bank database

fluctuations. It should be emphasized that despite all high revenues, many oil-dependent countries face the problem of poverty, low quality of education, lack of a modern infrastructure and a poorly developed high-technology sector. In most cases, the agricultural sector is also neglected and undercapitalized. Figure 3 shows food exports as a percentage of merchandise exports in 2000, 2008 and 2016, for selected countries. Due to data limitations, figure 3 does not embrace Equatorial Guinea, Chad or Turkmenistan.

Figure 3 shows that food exports are a minor player in total merchandise exports and constitute less than 6% of total exports. It concerns all selected countries apart from Ecuador, where food exports accounted for more than 50% of total merchandise exports and Norway, where the ratio is around 13%. The main exported agricultural products of Ecuador are bananas, shrimps, cacao and coffee, while Norway is one of the largest seafood exporters.

Table 1 depicts basic agricultural statistics for twenty selected oil-dependent countries in 2016. The second column in table 1 presents agricultural land as a share of a country's total land area. Agricultural land refers to land area that is arable, under permanent crops or under permanent pastures. Agricultural land constitutes more than 50% of total land for six out of twenty selected countries. The lowest share of agricultural land is in Norway, Brunei Darussalam, the United Arab Emirates and Oman (below 5% of total land).

The relevant measure of agricultural performance is agricultural value added. Table 1 presents agricultural value added as a share of GDP ratio. Agriculture is a minor component of GDP for the majority of selected oil-dependent countries (table 1). Half of the selected countries are marked by agriculture value added as a share of GDP ratio higher than 5%. Chad and Nigeria are distinguished by the highest ratio, 49.45 and 20.98, respectively. Qatar, Kuwait and the United Arab Emirates are among countries where the ratio is lower than 1%.

Table 1. Agricultural statistics in oil-rich countries in 2016

Country	Agricultural land [% of land area]	Agriculture value added [% of GDP]	Male employment in agriculture [% of male employment]	Female employment in agriculture [% of female employment]
Kuwait	8.38	0.57	4.81	0.08
Iraq	21.34	5.10	12.57	43.67
Saudi Arabia	80.78	2.69	6.93	0.55
Oman	4.75	1.97	6.95	0.59
Congo, Rep.	31.12	8.73	35.82	37.69
Azerbaijan	57.70	5.60	30.94	42.10
Qatar	5.65	0.18	1.41	0.01
Equatorial Guinea	10.12	2.37	52.59	67.89
The United Arab Emirates	4.57	0.78	0.19	0.01
Iran, Islamic Rep.	28.21	9.64	17.13	21.99
Angola	47.48	8.16	42.11	56.24
Algeria	17.41	12.30	13.35	9.64
Kazakhstan	80.38	4.56	18.77	16.94
Chad	39.66	49.45	82.90	92.52
The Russian Federation	13.29	4.18	8.33	5.03
Brunei Darussalam	2.73	1.20	0.66	0.48
Turkmenistan	72.01	9.30	6.47	11.19
Norway	2.70	2.13	3.09	0.98
Ecuador	23.31	9.54	29.07	23.83
Nigeria	77.74	20.98	44.90	26.09

Source: own elaboration based on the World Bank database

Although, in a dozen oil-dependent countries, agriculture constitutes only a minor share of GDP, agricultural sectors still provide the main livelihood for many people. Chad is an example of an oil-dependent country with very high employment in agriculture (table 1). It concerns both men and women. High employment in agriculture is also observed in Iraq, the Republic of the Congo, Azerbaijan, Equatorial Guinea, Angola, Ecuador and Nigeria. These economies also represent developing countries with a low GDP per capita. On the other hand, countries like Kuwait, Saudi Arabia, Oman, Qatar, the United Arab Emirates, Brunei Darussalam and Norway belong to a group of oil-dependent countries with a low agricultural employment ratio and high GDP per capita.

It should be stressed that many oil-dependent countries have neglected their rural economy since oil discovery. Moses Ekperiware and Michael Olomu [2015] claim that, since the oil boom in 1970, a steady decline in Nigerian agricultural productivity has been observed. They stress that the agricultural sector has largely been ignored in favour of the oil and gas industry. Nigeria has 77% of land suitable for agricultural production, while only 40% remains cultivated [Ekperiware, Olomu 2015]. In spite of governmental efforts made to diversify the economy and develop the agricultural sector, according to the World Factbook published by the Central Intelligence Agency, over 62% of Nigerians live in extreme poverty and suffer from severe food insecurity.

### Summary and conclusions

This paper is focused on the agricultural sector and aims to demonstrate agricultural performance for the most oil-dependent countries. Based on oil rents as a share of GDP ratio, twenty of the most oil-dependent countries are selected. It is shown that food export constitutes a tiny part of total merchandise export. It concerns all selected countries apart from Ecuador and Norway. The paper shows that agriculture value added is a minor component of GDP for the vast majority of selected oil-dependent economies. Chad and Nigeria are distinguished by the highest agricultural value added to GDP ratio. Qatar, Kuwait and the United Arab Emirates are, on the other hand, among countries where the ratio is lower than 1%. Moreover, the paper depicts employment in the agricultural sector and indicates oil-dependent countries with the highest ratio of employment in agriculture. Chad is an example of an oil-dependent country where the agricultural sector employs three quarters of the country's workforce.

Many oil-dependent countries have neglected the rural economy since oil discovery. The agricultural sector has largely been ignored in favour of the oil and gas industry. However, it should be stressed, that although agriculture constitutes only a minor share of GDP in many oil-dependent countries, the agricultural sector still provides the main livelihood for many people. It mainly concerns developing economies with good agricultural conditions. Therefore, the government should pay more attention to promoting the economy and focus on market development to provide adequate on-farm income that is a driving force behind competitiveness, stability and high growth in the agricultural sector.

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### Streszczenie

Celem artykułu jest przedstawienie sytuacji w sektorze rolno-spożywczym krajów uzależnionych ekonomicznie od ropy naftowej. Wyodrębniono dwadzieścia państw, których renty ekonomiczne generowane z produkcji ropy stanowią dużą część ich produktu krajowego brutto. Pokazano, że eksport produktów żywnościowych w tych krajach stanowi jedynie niewielki odsetek całkowitego eksportu towarów. Ponadto pokazano, że udział rolnictwa w generowaniu wartości dodanej brutto był niewielki dla większości badanych gospodarek. Czad i Nigeria reprezentują państwa z największym udziałem rolnictwa w PKB, natomiast Katar, Kuwejt i Zjednoczone Emiraty Arabskie to kraje z najniższym udziałem. Od momentu odkrycia surowców wiele gospodarek bogatych w ropę sukcesywnie zaniedbuje sektor rolniczy. Należy jednak pokreślić, że sektor rolniczy nadal stanowi bardzo ważne źródło utrzymania wielu ludzi z krajów bogatych w surowce naturalne. Dotyczy to przede wszystkim krajów rozwijających się.

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