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Landscape Discussion of Oil Rents and Primary Government Expenditure Budget

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Abstract

Purpose: This study compares Malaysia's oil rent dynamics and primary government approved budget (PGEB) with other major oil-exporting countries. This study reviews the annual time series data from 2005 to 2020 of oil rents and PGEB.

Methodology: The outcomes derived from meta-analysis approach are presented in graphical comparisons of oil rents and PGEB of Malaysia with other oil exporters. A horizontal comparison was also carried out. Kuwait, Saudi Arabia, Nigeria, Kazakhstan, Brazil, and the Russian Federation were selected as relevant oil exporters.

Findings: Referring to the historical graphical presentation, the oil market fluctuations were linearly aligned to the budget figure among oil exporters. The study results portray historical connections between oil rents and PGEB in the context of Malaysia and other oil exporters, which may be beneficial to policymakers and practitioners in their decision-making process.

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Practical Implications: The findings that display the historical connections of Malaysian oil rents and PGEB with other oil exporters serve as a guideline to policymakers and practitioners.

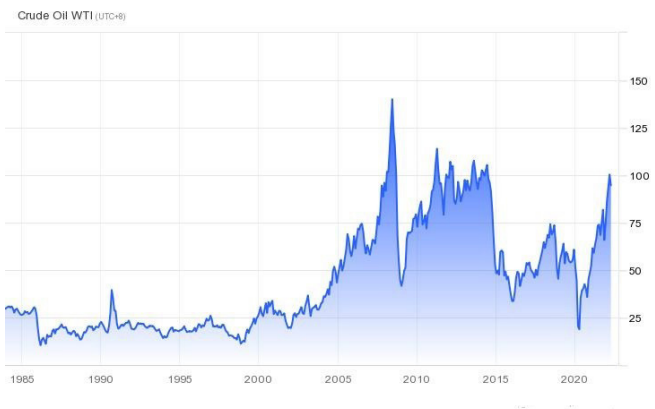
Originality/Value: In addition to the Malaysian setting, the scenario of other oil exporters amplifies the dynamics of oil rents on PGEB formulation.

Keywords: Oil rents, primary government, approved budget, crude oil, Malaysian economy.

1. Introduction

The energy market has garnered attention since these past few decades. Oil is still one of the prime energy sources worldwide, while oil rents are the primary contributor to the national income among oil-exporting countries. National economies fluctuate along with the price of crude oil at the global scale due to their substantial dependence on oil revenues. Alteration in global oil prices has a strong impact on both oil-exporting and oil-importing countries, mainly because each economic component has direct or indirect affiliation with the oil market (Lin & Tsai, 2019). The cost of crude oil is influenced by many factors, such as global oil market uncertainty, geopolitical instability, US currency index, oil price volatility, absolute reductions in crude oil demand, and low oil output (Meng & Liu, 2019). The Russian invasion of Ukraine in February 2022 triggered the oil market and spiked the oil price (see Graph 1). Notably, the oil price began to stabilise in 2021 with substantial oscillations from a strong downturn in 2020 due to the Coronavirus Disease 2019 (Covid-19) pandemic. The Russia-Ukraine conflict has provoked the oil market sharply since late February 2022 due to the supply chain disruption since Russia has a significant role as one of the largest oil exporters in the world market.

Graph 1: World Crude Oil Price from 1985 to May 2022



Source: Trending Economics Database

Graph 1 illustrates the historical trend of the crude oil price since 1985. It was stable until 2004 when the price began rising, and from mid-2007, the oil price hit its peak due to the global financial crisis of 2007-09. Graph 1 demonstrates that the oil prices declined due to the Covid-19 pandemic and reached the bottom in 2020 prior to the Russia-Ukraine conflict. Evidently, significant events affected the crude oil price (Yusof & Kalirajan, 2020; Yeoh, 2019). As such, oil price fluctuations were associated with domestic oil rents and PGEB of oil exporters.

Oil market volatility is particularly significant among large oil exporter economies, such as Saudi Arabia, Russia, Kuwait, Iran, Iraq, and Malaysia, along with other crude oil exporter countries, whose economies are partly or heavily reliant on crude oil prices (Nasir et al., 2019; Charfeddine & Barkat, 2020). Oil rents contribute a large share of the aggregate national revenue that determines fiscal budgets. Prior studies acknowledge that oil rents have a significant role in paving the path for the budget-making process among oil exporter countries (García-Albán, González-Astudillo, & Vera-Avellán, 2021; Ackah et al., 2020).

As an oil exporter, the global oil price fluctuation has substantially affected the Malaysian aggregate revenue collection and its national budget (Yusof & Kalirajan, 2020). Maji et al., (2017) asserted that a plunge in global oil rents reduced government aggregate revenue collection, which strongly affected the PGEB. On the contrary, a hike in the oil price might cause a surge in oil rents that could help governments formulate massive budgetary spending to stimulate the economy (Yusof & Kalirajan, 2020). Graph 1 provides evidence of crude oil price jumps in the global market due to geopolitical unrest (2021-2022), which facilitated Malaysia to generate more revenue from the oil sector as an essential oil exporter.

Despite the sharp decline in crude oil exports since the last two decades, Malaysia remains a net crude oil exporter (Shangle & Solaymani, 2020). The proportion of crude oil exports to gross domestic product (GDP) in Malaysia has exceeded by 5%. Crude oil imports and exports contributed 3.3% and 5.5%, respectively, of real GDP in 2010 to Malaysia. Oil rents contribute a significant fraction of the aggregate revenue of the country. On the contrary, if global oil prices rise, the value of Malaysia's crude oil exports increases and so does the national budget expenditure (Maji et al., 2017). As an oil exporter country, oil price shock significantly affects the Malaysian aggregate revenue collection and its budgetary policy formulation.

Studies have revealed that both government expenditure and budgetary constraints of oil exporter countries highly rely on oil rents, such as Saudi Arabia, Iran, Iraq, Arab Gulf countries, Brunei Darussalam, and Nigeria (Mikhaylov, 2019; Kreishan, Abou Elseoud, & Selim, 2018). Malaysia is not an exception from the list of those countries, considering the impact of oil rents on its domestic policy measures. Hence, any international market fluctuations in oil price could substantially affect the oil rent collection in Malaysia.

The emerging issues revolving around the oil segment imply that the countries must be investigated by the significant alliance to formulate effective PGEB. Oil rent instability exerts a direct impact on Malaysia's budget formulation as an oil-exporting country. Although many studies have examined the effects of oil rent on economic growth, oil market volatility on change, oil rents on sustainability, as well as the impact of oil price on financial development; only a handful of studies have assessed the importance of oil rents on PGEB formulation in the context of Malaysia (Salmana, Majeedb, & Ameen, 2019; Yeoh, 2019). Almost no study has compared Malaysia with other relevant oil exporters regarding oil rent issues. Therefore, this present study compared the oil rent dynamics and PGEB of Malaysia with other major oil-exporting countries by reviewing the annual times series data from 2005 to 2020.

1.1 Significance of the Study

Several identified study gaps motivate the execution of this present study. First, past studies mostly focused on oil rents and budget policy of different countries. These include oil and gas rents of the Russian federation budget policy (Sabitova & Shavaleyeva, 2015; Mikhaylov, 2019), oil rents and state budget dynamic relationship in Bahrain (Kreishan, Abou Elseoud, & Selim, 2018), the impact of world oil prices on budget and monetary policy of OPEC (Alekhina & Yoshino, 2018), and oil rents management in Iraqi budget formulation (Salmana, Majeedb, & Ameen, 2019). Second, the existing studies in the context of Malaysia hardly touch the present emerging issues, such as monetary policies to oil price changes (Shangle & Solaymani, 2020), the relationship between crude oil variables and budget variables (Zakaria & Shamsuddin, 2017), as well as the resource management of the oil and gas sector (Yeoh, 2019). As a result, only a few studies have assessed similar issues in different setting, while the Malaysian context in the literature on such topics is exceptionally scarce. In order to bridge these gaps, this study compared Malaysia's oil rent dynamics and PGEB with other major oil-exporting countries by reviewing the annual times series data from 2005 to 2020.

This study contributes to the body of literature by shedding light on the oil rents alliance with PGEB of Malaysia. A landscape discussion regarding the oil rent dynamic on PGEB via comparison with relevant oil-exporting countries is presented in this study, while also considering other impactful exogenous factors, namely the global financial crisis of 2007-09, the Covid-19 pandemic, and the Russia-Ukraine conflict. Therefore, this study offers significant contributions by relating the present events to the topic at hand.

2. Literature Review

As a net oil exporter, Malaysia was ranked 25th in the world for oil reserves and 29th for oil production and exports in 2012 (EIA, 2013). The national crude oil reserves were estimated to be around 5 billion barrels in 2017, with daily production and exports of 241 thousand and 103 thousand barrels, respectively (Malaysia Energy Information Hub, 2020). Hence, oil rent accounts for a significant fraction of the national revenue (~ 22% in 2018) and the

country primarily relies on it (Malaysia Treasury, Section 2: Federal Government Rents, 2018). It is typical for the budget process to depend entirely on the national revenue collection (Shangle & Solaymani, 2020). However, it is difficult to predict the annual revenue stemming from a wide range of endogenous and exogenous factors. Therefore, formulating PGEB poses a certain degree of risk to its reliance on aggregate revenue collection. Within the oil revenue sector, both direct and indirect effects could be channelled via government budget expenditure (Kriskkumar, Naseem & Azman-Saini, 2022; Shangle & Solaymani, 2020).

The Government of Malaysia presents federal budgets on annual basis to propose its revenue and spending based on yearly forecast of economic circumstances. Federal funding encompasses the government's income and spending projections with fresh policy initiatives. However, the Covid-19 pandemic compelled most governments to take counter-cyclical measures to fight against the crisis. The federal government took the promotional policy action by injecting funds to stimulate the economy through massive budget. Apart from the massive budget for the Covid-19 stimulus, Malaysia spent more significant welfare funding and tax relaxation to preserve both public wellbeing and national productive sectors to mitigate the adverse impacts of the crisis (Shah et al., 2020). The Covid-19 pandemic led to a sharp decline in the oil price and the national revenue from this sector of the country (Dutta et al., 2021). As a result, the government enabled the big expansionary budget by borrowing and expecting oil rents to grow shortly in order to repay the debt that could stabilise the national economy.

Prior studies disclosed that oil rents significantly affected the Malaysian economy. Solaymani et al., (2015) reported that the plunge in the oil market lowered the Malaysian GDP, employment rate, economic progress, investment, and a host of other aspects. It is a reasonable belief that any decline in all financial components of Malaysia during low oil rents is an affiliate to the initial budget figure. This similar scenario was observed across other oil-exporting countries, whereby the fall in oil rents led to a decline in government budget expenditure (Nazari, Asadi, & Imanian, 2019; Bakirtas & Akpolat, 2020).

Ironically, Malaysia has subsidised the oil price since 1957 (Solaymani et al., 2015). If oil price rises, the subsidy also rises and exerts a direct impact on government budget formulation. Oil price fluctuations also adversely affect the domestic transport sector, production sector, and supply chain, among others (Kreishan, Abou Elseoud, & Selim, 2018; Hussein, 2021). As a result, tax revenue collection from those sectors was affected, thus further affecting the projected budget. Hence, the rise or fall of oil rents imparts a direct influence on the PGEB of oil-exporting countries. Thus, this study conducted a meta-analysis to unveil the oil dynamics on PGEB.

The Wagner’s Hypothesis (1977) upholds that during the industrial revolution, the share of public expenditure in total expenditure grew as the national real income per capita increased. Hence, economic progress causes an increase in the relative size of the public sector.

Studies on Wagener's law of expansion have resulted in mixed findings. Some discovered a positive relationship between public sector development and economic growth, particularly among developing countries but not underdeveloped ones (Sharma, Srivastava, & Khanna, 2022). Even in developed countries, some demonstrated a negative link between government spending and income. Olanrewaju and Funlayo (2021) validated Wagner's theory about the relationship between three major government expenditure components (health, education, and capital investment) and economic growth in Nigeria and Angola Their finding revealed no indication of long-run correlation between government expenditure components and economic growth.

Rani and Kumar (2022) assessed the validity of Wagner's hypothesis for the Indian economy before (1967-1990) and after (1991-2015) reformation period. The study looked into six variants of Wagner's hypothesis. The outcomes indicated considerable support for Wagner's hypothesis during the post-reform period, while the elasticity of government spending to economic growth was low during the pre-reform period. In all versions of Wagner's theory, unidirectional causality seemed to shift from economic growth to government spending.

Faheem, Azali, Chin, and Mazlan (2021) examined the dynamic relationship between oil prices and government spending in Saudi Arabia, Kuwait, and the United Arab Emirates from 1991 to 2017. The study outcomes unveiled the existence of asymmetric behaviour in the oil price, which is a vital aspect considered by fiscal authorities when deciding on public expenditures. The results evidenced the Keynesian theory in the United Arab Emirates. While Kuwait fit both ideas concurrently, only Saudi Arabia verified Wagner's law. The findings corroborate the spend-and-revenue hypothesis in Saudi Arabia and Kuwait, but not in the United Arab Emirates. Thus, the government should prioritise reinvesting the excess from oil receipts into other areas of the economy to mitigate the negative consequences of the decline in oil price.

3. Research Data and Methodology

The time series data were collected from the World Development Indicators of the World Bank databank from 2005 to 2020 based on data availability. Oil rents were based on the country's crude oil-generated revenue percentage of GDP. The PGEB refers to the percentage (% of GDP) retrieved from the Government Finance Statistics (GFS) of International Monetary Fund (IMF). Tax revenue data of the selected countries are presented in Tables 1 and 2, along with oil rents and PGEB. Tax revenue (% of GDP) data were collected from the World Bank, except for Kuwait and Nigeria that were gathered from the Organisation for Economic Co-operation and Development (OECD)[1] and the CEIC Data[2] sources, respectively.

1 https://www.oecd.org/ctp/tax-policy/revenue-statistics-africa-nigeria.pdf
2 https://www.ceicdata.com/en/indicator/kuwait/tax-revenue--of-gdp#:~:text=Kuwait

The gathered raw data were analysed using the meta-analysis approach, which described the issues properly and effectively (Crits-Christoph, 1992; Lipsey & Wilson, 2001). Past studies and collected data were synthesised to meet the study objectives by adhering to the approaches prescribed by Crits-Christoph (1992) and Lipsey and Wilson (2001). The analysed data are illustrated via graphical presentation to portray the historical alliances between the variables.

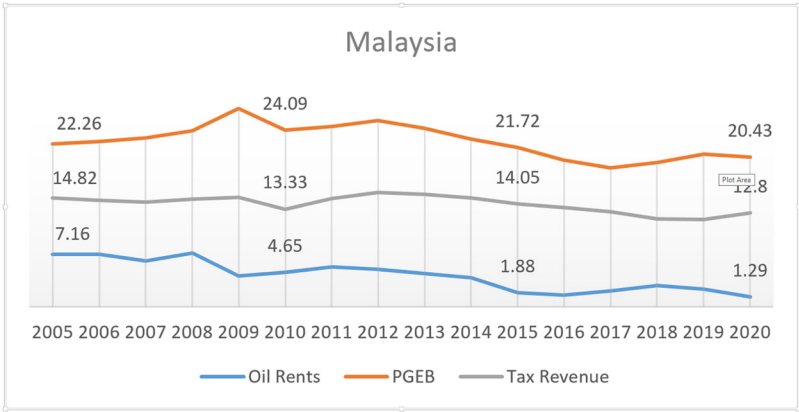
Malaysia is the primary setting of this study in exploring the oil rent dynamics on PGEB. Other oil-exporting countries were compared with Malaysia for oil rent and PGEB. The countries were selected based on two criteria: top oil exporters and emerging economies. This comparative study involved Malaysian and other top oil exporters identical to Malaysia for some economic parameters determined from Worldstopexports 2020[3] and World Bank 2020[4]. The selected countries were Saudi Arabia, Russian Federation, Kuwait, Kazakhstan, Nigeria, and Brazil.

4. Discussion

Graph 2 displays the relationship between oil rents and tax revenue in the Malaysian government's preliminary approved expenditure budget (PGEB). In 2005, Malaysia's oil rent and tax revenue were 7.16 and 14.82, respectively, while the approved expenditure budget was 111.56. The oil rent, the tax revenue, and the PGEB remained almost unchanged for three years. In 2008 and 2009, the oil rent decreased and the PGEB behaved inversely due to the 2007-09 credit crisis. Hence, the government adopted a massive budget by borrowing to support the economy. Several studies verified that the 2008 financial crisis disrupted the production sector and reduced oil demand, which caused the oil rent and budget figures to plunge (Ahmad & Abdul-Ghani, 2011; Ferreira et al., 2019; Sheikh et al., 2020). In 2015 and other years, PGEB mostly followed the trend of oil rents. Tax revenue also contributed to PGEB, which is almost constant as the graph shows but PGEB interestingly adhered to the fluctuations of oil rents.

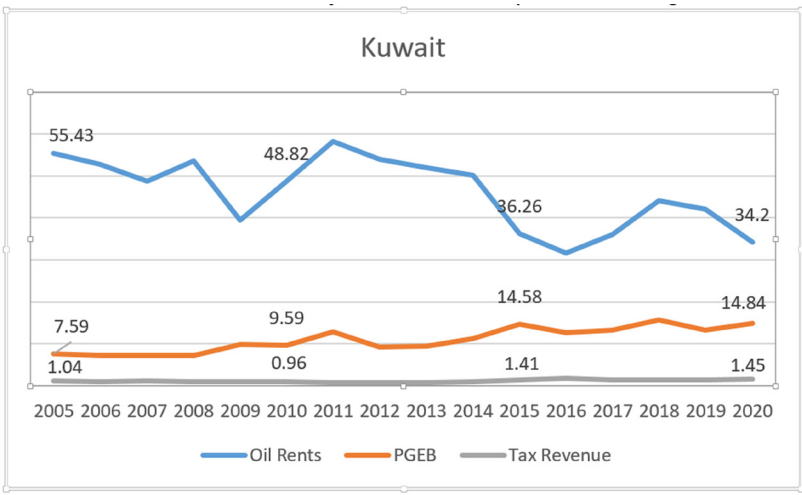
3 https://datahelpdesk.worldbank.org/knowledgebase/articles/906519
4 https://www.worldstopexports.com/worlds-top-oil-exports-country/

Graph 2: Effect of Oil Rents on Primary Government Expenditure Budget (PGEB) of Malaysia



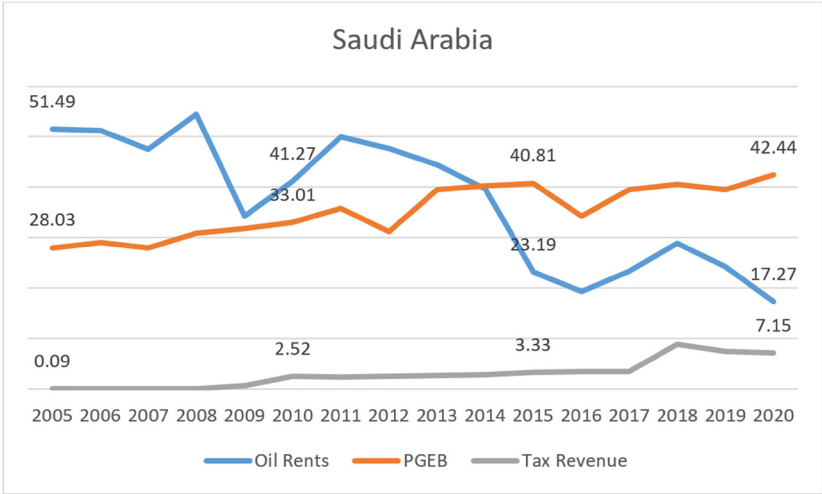
Further examination regarding the effect of oil rents on PGEB in other relevant oil-exporting countries is imminent to validate the findings for Malaysia. Graph 3 portrays the oil rent and PGEB of Kuwait, which is one of the top oil exporters and ranked 7th among the oil exporters in 2020 (Nourelfath, Lababidi, & Al-Dowaisan, 2022). The graph demonstrates that both oil rents and PGEB fluctuated within the same pattern, but the tax revenue remained somewhat unchanged similar to Malaysia. In 2009, during the credit crunch, the oil rent plunged while the PGEB figure contrarily increased. In 2011, both oil rents and PGEB increased. A similar scenario was noted in other years, particularly for 2012-2013 and 2016-2019 (see Graph 3). However, the trend observed in 2020 differed due to the pandemic. Thus, Graph 3 implies that oil rents have a substantial role in the PGEB formulation in Kuwait, similar to Malaysia.

Graph 3: Effect of Oil Rents on Primary Government Expenditure Budget of Kuwait



Next, the trend of oil rents and PGEB of Saudi Arabia, the largest oil-exporting country in the world, was examined. Several studies acknowledged that the budget expenditure of Saudi Arabia is highly reliant on oil rents (Alkhateeb, Mahmood, & Sultan, 2021; Alargoob & Alrashidi, 2021). Any change in the oil market is highly elastic with the budget process, as depicted by the fluctuations in Graph 4. The graph displays that the oil rent decreased from 2005 with some changes and the PGEB trend of the country responded similarly with some minor inverse fluctuations. Although the oil rents sharply dropped in 2009 and 2020, the PGEB of the country rose due to global economic depression and Covid-19 pandemic. Despite its most significant share of oil, the trend of oil rents and PGEB in Saudi proved the significance of oil rent for their national revenue collection and budget policy. The importance of tax revenue to PGEB was highlighted due to the economic diversification in recent years in Saudi Arabia, while highly depending on oil rents for budget process. In Malaysia, in a broader sense, the economy was comparatively less dependent on oil rent due to its diversification and sustainability (Rahman, 2020; Lau & Lee, 2021), which differed from the Saudi Arabian economy.

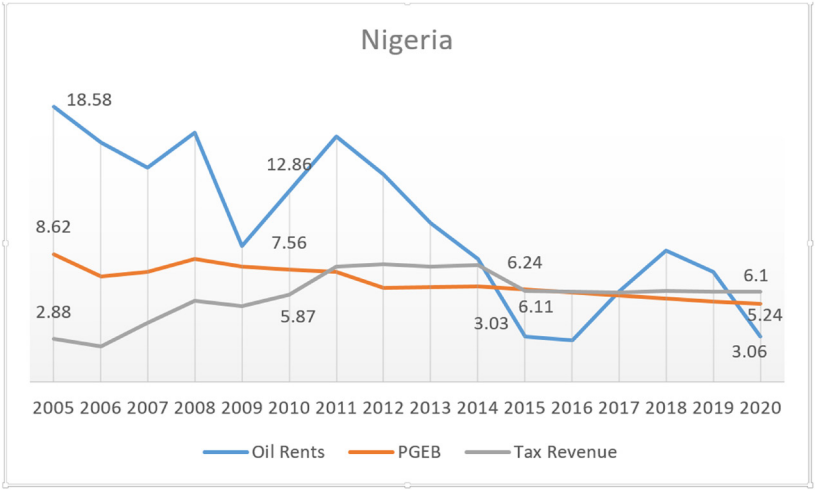
Graph 4: Effect of Oil Rents on Primary Government Expenditure Budget of Saudi Arabia



Graph 5 illustrates the trend of oil rents and PGEB in Nigeria. The country reduced its reliance on oil sector for PGEB formulation, as its trade sector and information and communications technology (ICT) domain began progressing (Murat & Isaac, 2019). In 2005, the oil rent was 18.58% of the GDP and the PGEB was 8.62%, but the tax revenue was only 2.88%. Despite the 2011 economic crisis that hit the country and affected almost all sectors, its PGEB showed barely any change because the country paid a huge amount of debts taken to tackle the economic depression in 2009. However, the scenario changed in 2020 when the oil sector only contributed 6.1% of the GDP, but the PGEB was higher at 5.24. Notably, the tax revenue sector grew but it exerted a nominal impact on budget formulation of the country. Oil rent

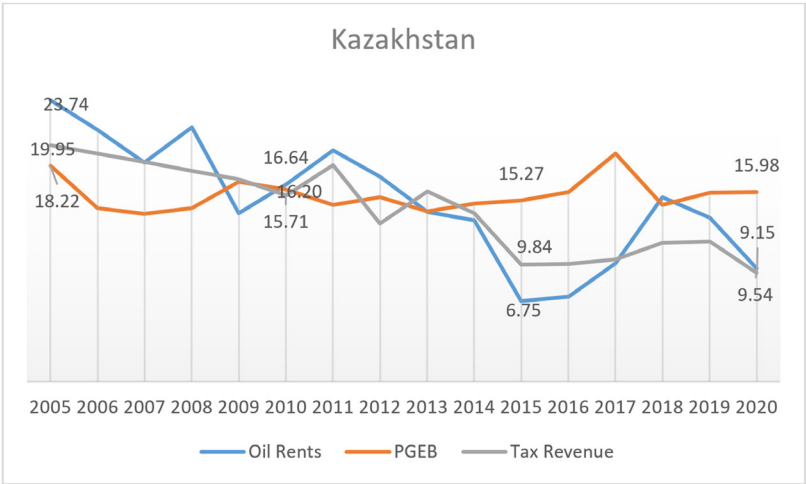
was still essential for PGEB formulation, but the vicissitudes of the budget mostly happen following the oil rent value, despite the recent boom in trade and ICT segments.

Graph 5: Effect of Oil Rents on Primary Government Expenditure Budget of Nigeria



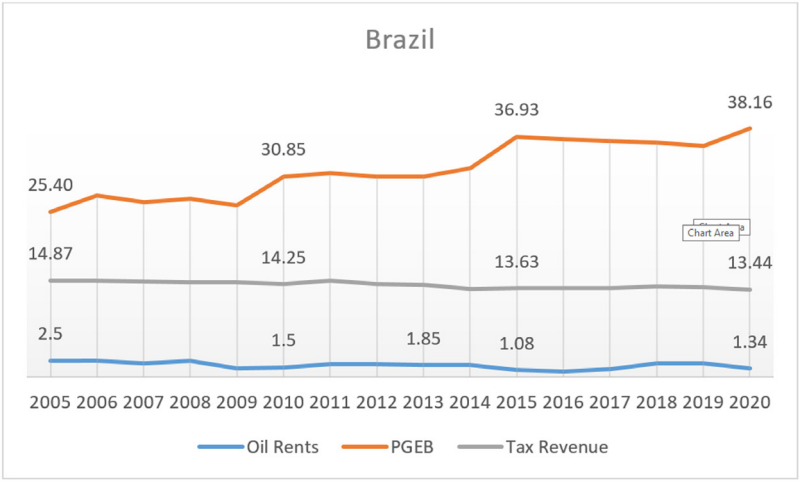
The PGEB of Kazakhstan was closely linked to its oil industry. Graph 6 shows that when oil rent fluctuated, PGEB fluctuated as well in most years. Oil rents increased and declined in 2011 and 2019, respectively, when compared to previous years. The PGEB also climbed and reduced in parallel with the oil rent from 2005 to 2010. In 2009 and 2020, however, the budget barely adhered to the trends of the oil rents. Graph 6 confirms that the oil rent is too crucial to support the PGEB formulation in the same way it helps Malaysia.

Graph 6: Effect of Oil Rents on Primary Government Expenditure Budget of Kazakhstan



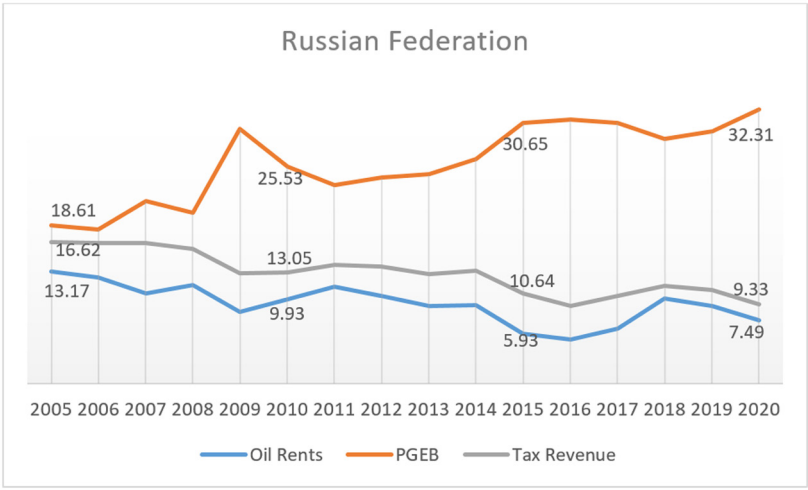
Brazil and Malaysia are comparable in many ways; both endeavour to transition from developing to developed countries, maintain stable growth, and gradually reduce their reliance on oil rents. As presented in Graph 7, Brazil's oil rents are linked with PGEB, but the dependency decreased, similar to the case in Malaysia. While some m inor oscillations were noted in oil rents, PGEB also displayed some fluctuations in the same years; indicating that oil rents continued to affect Brazil's PGEB. The tax revenue sector of the country emerged as one of the prime sectors that contributed in the budget-making process and remained almost constant.

Graph 7: Effect of Oil Rents on Primary Government Expenditure Budget of Brazil



Graph 8 shows the trend of oil rents and the government budget of the Russian Federation. Despite being the second-largest oil producer, the oil rent trend observed in Russia is similar to that of Malaysia. Graph 8 demonstrates that the oil rents experienced some fluctuations and a downward trend, while the Russian PGEB also acted similarly from 2005 to 2015. In recent years, the oil sector dependency decreased significantly due to the improvement in industrial sectors. Some studies confirmed that Russia has been trying to diminish its oil dependency for budget fund support (Alkhateeb, Mahmood, & Sultan, 2021; Alargoob & Alrashidi, 2021). Russia have begun diversifying its economy for sustainable budget expenditure by emphasising on industrialisation, agriculture, technology production, tourism, etc. (Sapuan & Roly, 2020; Lau & Lee, 2021).

Graph 8: Effect of Oil Rents on Primary Government Expenditure Budget of the Russian Federation



Apart from oil rent, tax collection was one of the largest revenue sources for PGEB formulation. Tax revenue was the most significant contributor to budget formulation, although oil rents were crucial in budget formulation for oil exporters. In order to present a better scenario of oil rents and PGEB, tax revenue was weighed in for Malaysia and other oil exporters.

Table 1: Descriptive Statistics, n=112

Variable	Mean	Std. Dev.	Min	Max
Oil rents	17.82	17.15	.82	58.25
PGEB	21.26	10.47	5.24	42.44
Tax revenue	9.37	5.83	.09	19.95

* Number of Countries 7, * Oil rents percentage of GDP
* PGEB percentage of the GDP, * Tax Revenue percentage of GDP

Table 1 tabulates the mean, standard deviation, minimum, and maximum values of the observed data among the selected countries. The mean and standard deviation values of oil rents are 17.82 and 17.15, respectively. Next, the minimum and maximum values of oil rents are 0.82 and 58.25, respectively. As for the PGEB, its mean and standard deviation values are 21.26 and 10.47, respectively. The minimum and maximum values of PGEB are 5.24 and 42.44, respectively. The table demonstrates that the mean value of tax revenue is 9.37 and the standard deviation is 5.83, while the minimum and maximum values are 0.09 and 19.95, respectively. No obvious standard deviation was observed to imply that the data are normally distributed.

Table 2 presents the oil rents, tax revenue, and PGEB data for Malaysia and the selected countries. In Malaysia, both oil rents and PGEB decreased from 2005 onwards. Meanwhile, tax revenue remained consistent from 2005 to 2015, although at the same time, oil rents decreased, and a similar fall was noted for PGEB. In the rest of the years, the oil rents, tax revenue, and PGEB remained consistent with minor fluctuations. This scenario implies that a rise or fall in tax revenue barely affected any similar change in PGEB. Still, the fall and rise in oil rents mostly generated identical fluctuations in the PGEB of Malaysia. Several studies support these scenarios (Matallah, 2022; Dharfizi et al., 2020).

The scenario of two high oil rents countries, Kuwait and Saudi Arabia, is shown in Table 2. Their oil rents appeared to be the most significant contributors to their national revenue and PGEB. In Kuwait, the oil rents fluctuations were similar to PGEB, while the tax revenue offered a small contribution to both aggregate income and PGEB. The behaviour of oil rents and PGEB in Saudi Arabia is similar to that of Kuwait. Despite the increase in tax revenue, the PGEB of Saudi Arabia was still highly dependent on oil rents.

Table 2: Oil Rents, Tax Revenue and PGEB% of Malaysia and Two High Oil Rents Countries

	Malaysia			Kuwait			Saudi Arabia		
Year	Oil rents	Tax revenue	PGEB%	Oil rents	Tax revenue	PGEB%	Oil rents	Tax revenue	PGEB%
2005	7.16	14.82	111.56	55.43	1.04	94.88	51.49	0.09	123.11
2006	7.16	14.51	110.47	52.73	0.99	94.88	51.28	0.10	124.00
2007	6.219	14.30	112.24	48.72	1.13	94.85	47.53	0.11	122.70
2008	7.29	14.66	110.20	53.65	0.85	85.82	54.49	0.12	126.85
2009	4.15	14.94	99.96	39.58	0.97	96.28	34.31	0.70	125.57
2010	4.64	13.33	106.75	48.81	0.96	92.86	41.26	2.52	121.09
2011	5.41	14.79	108.34	58.24	0.76	99.45	49.98	2.33	142.53
2012	5.09	15.61	109.45	54.03	0.72	87.50	47.69	2.53	132.93
2013	4.49	15.31	101.55	52.08	0.78	90.90	44.43	2.73	121.31
2014	3.95	14.84	98.47	50.14	0.90	90.00	39.72	2.77	133.40
2015	1.87	14.05	94.85	36.26	1.41	90.67	23.19	3.33	116.43
2016	1.58	13.55	95.20	31.64	1.69	90.38	19.33	3.38	98.871
2017	2.15	12.94	100.94	36.13	1.38	89.11	23.31	3.38	104.49
2018	2.88	12.02	102.38	44.05	1.37	92.55	28.86	8.92	110.37
2019	2.36	11.93	96.74	42.14	1.28	95.55	24.24	7.40	95.791
2020	1.29	12.80	95.82	34.20	1.45	104.65	17.27	7.15	105.46

* Oil rents percentage of GDP
* PGEB percentage of GDP
* Tax Revenue percentage of GDP

In the context of other oil exporters (developing countries), such as Kazakhstan, Nigeria, Brazil, and the Russian Federation, the oil rents for these countries declined, which is similar

to the case observed in Malaysia, Kuwait, and Saudi Arabia. Simultaneously, tax revenue is a vital revenue source to these countries, except Nigeria. Table 3 shows that in most of the years when oil rents fluctuated, the PGEB also fluctuated mainly in the exact directions for these countries. Despite its importance in national aggregate revenue collection, tax contributed to a minor wave of fluctuations in PGEB by its up and down patterns, as portrayed in Table 3. The PGEB of Nigeria appeared to be relatively stable.

Table 3 highlights the stability of oil rents, despite the rise in tax revenue. The PGEB rose in accordance to tax revenue increment. This scenario proves that oil rents have a crucial role in the PGEB of most of the oil-exporting countries. However, from 2005 to 2020, most countries faced several global and regional economic crises, such as the 2007-08 recession, the Covid-19 pandemic, and stagflations in several countries. Therefore, many countries increased their PGEB to recover the economy despite the oil market plunge and low oil sector revenue.

For example, in 2020, Brazil and the Russian Federation increased their PGEB dramatically despite the plunge in oil rent, while their tax revenue was almost unchanged. Studies reported that many oil-exporting countries increased their budget value to fight the crisis, thus expecting to cover up the budget gap with high oil rents after the spike in oil market demand (AlKathiri et al., 2020; Jin & Xiong, 2021).

Table 3: Oil Rents, Tax Revenue and PGEB% of Medium Oil Rents Countries

	Kazakhstan			Nigeria			Brazil			Russian Federation		
Year	Oil rents	Tax revenue	PGEB%	Oil rents	PGEB%	Tax revenue	Oil rents	Tax revenue	PGEB%	Oil rents	Tax revenue	PGEB%
2005	23.74	19.949098	119.32	18.577	89.6233	2.875	2.4993	14.87322	95.261	13.169	16.62291	116.881
2006	21.22	19.228915	117.24	16.147	89.5418	2.408	2.5078	14.777837	95.05	12.479	16.568216	114.558
2007	18.49	18.508733	113.2	14.444	89.4604	3.977	2.0794	14.682455	93.564	10.599	16.551313	109.571
2008	21.48	17.78855	125.73	16.845	90.4414	5.459	2.4225	14.587073	91.077	11.59	15.818068	115.228
2009	14.20	17.068368	96.272	9.1652	92.7222	5.109	1.3203	14.49169	87.165	8.4306	12.956352	107.04
2010	16.63	15.71238	110.14	12.857	78.3231	5.868	1.5009	14.249541	89.005	9.9294	13.048349	102.331
2011	19.50	18.257834	110.68	16.556	95.912	7.804	1.9916	14.851324	87.923	11.418	13.954204	102.501
2012	17.273	13.312098	105.29	13.995	87.8008	7.957	2.0092	14.332365	86.606	10.342	13.754673	101.884
2013	14.326	16.030178	96.337	10.709	91.2152	7.769	1.8549	14.125513	86.451	9.1227	12.933492	99.6683
2014	13.615	14.193433	105.25	8.2974	87.5263	7.873	1.8675	13.490125	88.524	9.2004	13.255361	106.243
2015	6.7532	9.8357116	91.056	3.0271	105.107	6.114	1.0761	13.629717	88.746	5.9348	10.642095	100.886
2016	7.1422	9.9242502	111.01	2.8	80.469	6.068	0.8201	13.710483	96.091	5.1778	9.1831221	101.972
2017	9.9812	10.303011	130.31	6.0608	87.4371	6.017	1.2353	13.605289	91.005	6.47	10.288406	101.105
2018	15.581	11.7178	107.48	8.8408	86.6328	6.136	2.0538	13.940349	92.518	10.012	11.468773	101.112
2019	13.837	11.786943	116.3	7.4	106.168	6.056	2.0382	13.736164	94.282	9.1588	10.975124	100.983
2020	9.538	9.1463599	116.76	3.0584	98.7251	6.101	1.3408	13.442484	119.78	7.4925	9.3289371	117.028

* Oil rents percentage of GDP
* PGEB percentage of GDP
* Tax Revenue percentage of GDP

This study explored the oil rent dynamics in PGEB formulation in Malaysia and other selected oil exporters. The illustration from Graphs 2 to 8 and Tables 1 to 3 summarise the findings of this study, which imply the significance of oil rents in PGEB formulation of Malaysia and other oil exporters. The conclusions are harmonious with several past empirical studies. The studies verified that oil rents shape the economy, including the budget process of oil-exporting countries, such as Saudi Arabia, Russia, Kuwait, Nigeria, Brunei Darussalam, Iraq, Iran, and the Arab Gulf (Ahmadov, Sarkarli, & Rahmanov, 2018; Alekhina & Yoshino, 2019).

While tax revenue emerged as one of the prime sectors of the aggregate income of any country, including the oil exporters, it projected relatively minor dominance in PGEB formulations among the studied countries. In recent years, some oil exporters had diversified their economies and minimised their oil rents dependency, such as Brazil, Mexico, Malaysia, and Vietnam (Ross, 2019; Charfeddine & Barkat, 2020; Tang & Abosedra, 2020). Oil rents are still vital in formulating PGEB among oil-exporting countries (Hassan, 2021; Faheem et al., 2021).

As Malaysia gathered a considerable amount of oil export revenue, this motivated fiscal PGEB preparation. The persistent revenue from the crude oil sector barely caused any fiscal distress in Malaysia. The oil rents and PGEB of other oil exporters revealed consistent scenarios in the graphs and tables. The discussion implies that the overall oil sector is one of the prime sectors of the Malaysian economy and for the selected countries, due to its imminent role in PGEB formulation.

5. Conclusion and Policy Implications

In accordance to the study objectives, oil rents and PGEB of Malaysia and other selected oil exporters were analysed. Apparently, oil rents contributed considerably to the PGEB of the selected countries. If oil rents fluctuated, the PGEB also fluctuated in the studied countries. A historical comparison of oil rents and PGEB is presented between Malaysia and other oil-exporting countries based on the study objective. Interestingly, these oil-exporting countries highly relied on oil rents for their fiscal budget expenditure. Although oil rents reliance was not at the same level for all the analysed countries due to economic diversifications, a considerable dependence of the oil rents on PGEB formulations was still apparent.

The study provides some valuable policy implications that benefit the policymakers of Malaysia and other oil exporters. First, this study reviewed the oil sector and PGEB of the countries and disclosed that every significant event in the world (geopolitical and non-geopolitical) had direct connections with crude oil (oil rents) and PGEB. The financial crisis of 2007-09, the Covid-19 pandemic, and the most recent Russia-Ukraine conflict had affected oil rents and PGEB among oil exporters, including Malaysia. Therefore, policymakers in Malaysia and other oil exporters should consider the oil market volatility before PGEB approval, besides taking into account global geopolitical risks, economic recession, stock

market trends, natural calamities, cross-border terrorism, pandemic, and a host of other factors (Charfeddine & Barkat, 2020; Tang & Abosedra, 2020).

Second, the oil rents for all the studied countries significantly decreased in 2020, and interestingly, the PGEB behaved asymmetrically. During the Covid-19 pandemic period that witnessed the global lockdown, oil demand significantly decreased and the discussed oil exporters generated small revenue from this sector when compared to other years. At the same time, the PGEB increased rapidly to fight against the Covid-19 pandemic. Therefore, the oil exporters increased their oil production and exported considerably when the lockdown period ended to bridge the budgetary gap. As a result, policymakers must adjust their oil production and PGEB formulations upon considering practical factors.

At present, the production of renewable energy is highly prioritised in policymaking to minimise the production of CO2 emission, especially for environment sustainability. Malaysia and other oil exporters have many international treaties to lower CO2 emission and increase the share of renewable energy. These initiatives might decrease the demand for crude oil in the near future. Upon considering these issues, oil exporter countries should increase their oil production to avoid future oil demand fall or sharp price fall. Meanwhile, future studies should focus on the issue of future oil demand fall due to the huge production of renewable energy.

Moving on, countries should further diversify their economy to tackle any big shock from the oil sector. Several studies prescribed similar recommendations for the oil exporters (Lebdioui, 2019; Haseeb et al., 2019; Kardooni et al., 2018). Lastly, this study points out that economic diversification is crucial for oil exporters to enable sustainable budgeting. Renewable energy production should be prioritised to reduce oil dependency among oil consumers. Malaysia has prioritised several projects to generate 20% cleaner energy by 2030 (Abdullah et al., 2019). Hence, the Malaysian economy and budget consolidation are somewhat on the right track, along with further economic diversifications. Renewable energy production should minimise the existing oil rent dependency. Future studies, hence, may want to look into the impact of economic diversifications and renewable energy production in the PGEB of Malaysia and other oil exporters.

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