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## Contribution of Coal Export Performance to Gross Regional Domestic Product and Non-Tax State Revenue in the Kalimantan and Sumatera Regions

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### Keywords

coal export performance, gross regional domestic product, non-tax state revenues

### Abstract

Coal is a strategic and high-priority export commodity in addition to being a significant resource for generating electricity. This study's statistics assessment methodologies were inferential data and panel statistics regression evaluation. Associative studies are the study strategy that is consistent with the extent of explanation of this research. Associative studies are studies that seek to determine the relationship between two or more variables. Indonesia is the world's second-largest coal exporter and a major source of coal to Asian countries. In the last ten years, the mining industry generated 5-8% of Indonesia's GDP, with coal accounting for roughly 80% of the figure. Meanwhile, coal will contribute 170 percent of the PNB objective in 2022. The coal mining industry continues to contribute positively to the country's economy. The purpose of this study is to assess the impact of coal export performance on GDP and non-tax state income. Panel data regression analysis techniques are used in this study. According to the findings of the study, coal export performance



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### 1. Introduction

Indonesia is rich in attractive natural resources such as minerals and coal. Throughout this period, the mining industry has made an important contribution to the country's acceptance. This is demonstrated by the Non-Tax State Revenue (NPV) for the non-migas industry exceeding 70% by 2020. Because minerals and coal are nonrenewable natural resources, their management must be optimal and long-term. Furthermore, its usage must be dedicated toward the greatest well and prosperity of the people, as mandated by Article 33 para. 3 of the Constitution of the Republic of Indonesia of 1945.

Since the late 1970s, coal has been at the heart of Indonesia's energy policy. Although Indonesia does not have the world's greatest coal deposits, the amount of coal in the country is significant when compared to other fossil resources. Total coal reserves are 22.6 billion tons, accounting for 2.2% of total global reserves. The government has set a policy to enhance the use of coals as power generators, as indicated in different National Energy Policy (KEN) documents released since the 1980s, aided by the amount of coal reserves. Coal is expected to contribute 30% of the overall national primary energy mix by 2025, according to KEN 2014, with total energy supply predicted to reach 400 million tonnes of oil equivalent. (Kementerian ESDM, 2022)

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Demand for energy rises in tandem with economic expansion. In the last four years, Indonesia's energy consumption has climbed by roughly 26%, from 812 kWh per capita in 2014 to 1,021 kWh/capita in 2017. Indonesia mainly relies on fossil fuel power facilities to supply its electricity needs. More than 88% of power is generated using fossil fuels, with coal accounting for roughly 60%, natural gas accounting for 22%, and oil accounting for 6%, and renewable energy accounting for only 12% (Rahman, 2022).

Coal is a critical resource for generating electricity, as well as a major export commodity and a high priority. Indonesia is the world's second largest coal exporter and a major supplier of coal to Asian countries. Coal revenues have averaged roughly IDR 31 trillion (US\$ 2.17 billion) during the last four years, accounting for close to 80% of total non-oil and gas revenues. However, coal income contributes just roughly 1.5 to 2% of overall income to the state budget (Badan Pusat Statistik, 2022)

Indonesia is a major producer and exporter of coal in the globe. Indonesia has been a leading supplier of thermal coal since 2005, when it surpassed Australian production. Significant amounts of thermic coal exported are of medium quality (between 5100 and 6100 cal/gram) and low quality (less than 5100 cal/gram), with the majority of demand coming from China and India. According to estimates released by the Indonesian Ministry of Energy and Mineral Resources, Indonesia's coal reserves are expected to be depleted in around 83 years if current production levels are maintained. According to the BP Statistical Review of Global Coal Reserves, Indonesia is now rated ninth in terms of global coal reserves, with approximately 2.2 percent of total global carbon stocks proved (Purwanto & Artiani, 2022)

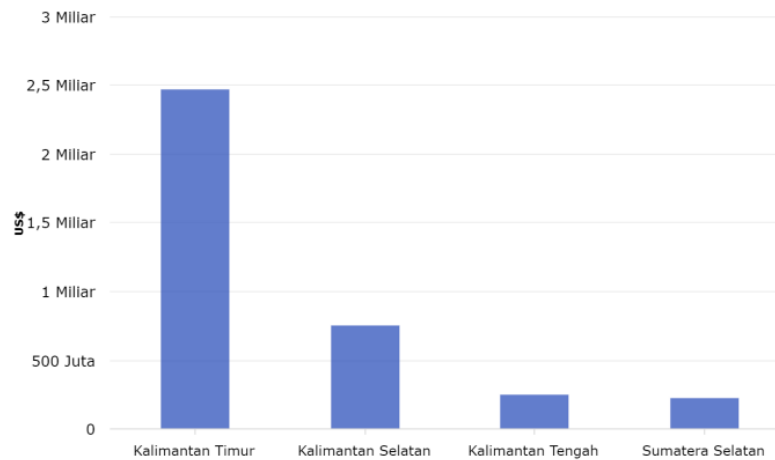
In the last ten years, the mining industry generated 5-8% of Indonesia's GDP, with coal accounting for roughly 80% of the figure. The government expanded coal production to nearly 500 million tons in 2018 and authorized miners to export additional coal. The government's motivation for coal extraction is to increase export earnings and help balance imbalances caused by oil and gas commerce. Indonesian coal exports account for 70 to 80 percent of overall production, with the remainder sold on the domestic market (Putri, 2019)

In terms of coal's contribution to GNP in 2022, the ESDM Ministry's Directorate-General of Minerals and Coal (Djen Minerba) recorded non-tax national income (GNP) from the mining sector as of December 16, 2022 at Rs. 173,5 trillion, or almost 170 percent of the objective set at Rs.101.8 trillions. The mining industry continues to contribute positively to the country's economy. GDP contribution in 2022 is significantly higher than in the previous year. This increase in GDP is largely reliant on a number of variables, including commodity prices, production volumes, royalty percentages, and compliance with responsibilities. The commodity price is now reasonable; the highest price this year for coal is \$330.97 per tonne at the October HBA price (Tua, Wibowo, & Rosyid, 2020)

Despite the fact that coal adds to GDP and GDP, it turns out that Indonesian coal supplies and production are concentrated in four of the 38 provinces: East Kalimantan, South Sumatra, South Kalimantan, and Central Kalimantan. The Kutai, Tarakan, and Barito coal reservoirs in East Kalimantan have medium-quality coal (caloric values between 5.100 and 6.100 kcal/kg), whereas the Central and South Sumatra sewers have low-quality coal reserves (calorie values between 5.100 and 6.100 kkal/kg), whereas the Central and South Sumatra reserves have low-quality coal (Dihni, 2022)

Coal has contributed significantly to the local economies of the four provinces. In 2017, the coal sector contributed for around 35% of the province's GDP in eastern Kalimantan. When oil and gas are factored in, it amounts to about half of the provincial GDP. This shows how heavily reliant eastern Kalimantan is on fossil fuels. While South Kalimantan has a lesser GDP than East Kalimantan, the coal sector in South Kalimantan contributes significantly to the province's GDP, accounting for 19-26% of the province's GDP over the last five years. Given the coal sector's high part of GDP and the disparities in the growth of coal and other sectors in both provinces, coal transitions may have a stronger influence on their economic, social, and environmental well-being (Azizah & Soelistyo, 2022)

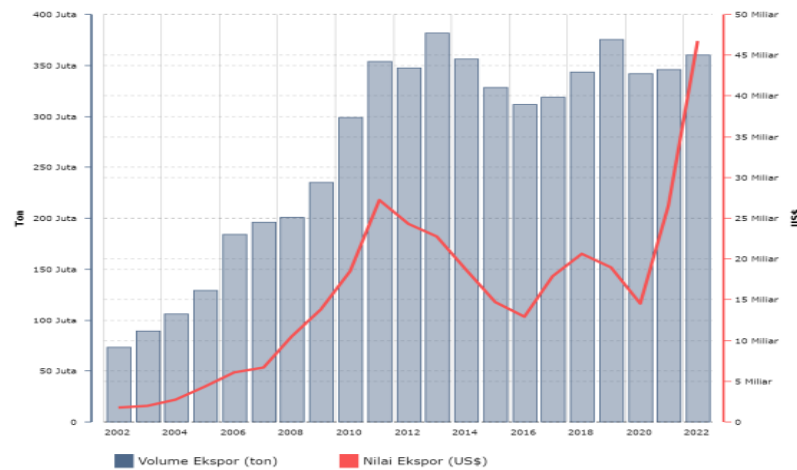
The largest coal-producing provinces in Indonesia as of September 2022 are as follows:



Source: BPS, 2022

### Figure 1 Province of the largest coal-stone export producer September 2022

East Kalimantan was recorded as the largest coal-exporting province by September 2022, with \$2.46 billion in total national coal exports, or 58.57% of total national coal exports. This represents a 0.02% decrease over the previous month. (mtm). Southern Kalimantan is the next big coal exporter. It was worth \$751.89 million, a 23.33% decrease from the previous month (mtm). Later, the value of coal exports from Central Kalimantan reached \$245.94 million, a decline of 20.13% month on month. (mtm). South Sumatra is also on the list of leading Indonesian coal producers, with a monthly value of USD 219.81 million, a 17.89% decrease. (mtm) (Setiawan, 2022)



Source: BPS, 2022

### Figure 2 Volume and Value of Indonesian Coal Stone Export (2002-2022)

According to figures from the Central Statistical Authority (BPS), Indonesia will export 360,28 million tons of coal in 2022, a 4.29% increase over 2021. Despite a minor increase in volume, Indonesian coal exports have skyrocketed, as shown in the graph. BPS recorded \$46.74 billion in Indonesian coal exports in 2022, a 76.16% rise over 2021 and a record high in the prior two decades. Indonesia's coal benchmark (HBA) price has risen considerably between now and 2022. By January 2022, the HBA had maintained at \$158.5 per ton, before rising to \$330.97 per ton by October 2022. In December 2022, the HBA train weakened to \$281.48 per ton. Despite the decrease, the price is still exceedingly high, over twice the national average (Ardiansyah & Setiawina, 2022)

The phenomenal increase in HBAs between now and 2022 was impacted by rising global coal demand, the advent of the Russian-Ukrainian war, and the political confrontation between Russia and the European Union. Russia stopped gas supplies to portions of the European Union after invading Ukraine. As a result, countries such as Germany, the Netherlands, and Belgium have been obliged to restart coal-fired power facilities in order to meet their electrical demands. By 2022, Indonesian coal shipments to European countries will have reached approximately 6 million tons, ten times the previous year's total of 396.5 thousand tons (Barasyid & Setiawati, 2023)

The researchers conclude that the coal industry's future prospects are still bright based on the description above. This is due to the fact that worldwide demand for coal remains high, despite improving domestic and global economic conditions. Countries all over the world still require coal for the construction of new power plants. So, for at least one or two decades, coal will continue to be used, and demand for coal will stay high.

### **Export**

Export is the legal transportation of commodities from one country to another, and export is particularly essential in determining a country's balance of payments (Seyoum, 2014)

Griffin and Pustay define export as the sale of things manufactured in one country for use or resale in another. Exports have the advantage of generating profits, and the national income generated by export activities will be handled by the country to stimulate economic growth. Exports also help to grow the market for certain commodities or services, as well as encourage the industry to boost productivity as a result of an expanded market (Nagy & Jám bor, 2018).

### **Gross Regional Domestic Product (GDP)**

Gross Regional Domestic Product (GDP) is one of the macroeconomic indicators that may be used to assess the status of the regional economy each year. GDP is a statistical measure of the added value of all economic activity in a given region. The PDRB is determined using the current price (ADHB) and the constant price base (ADHK) (Hartono, Busari, & Awaluddin, 2018)

The gross regional domestic product (GRDP) is the total value of finished goods and services produced by various production units in a region/region at a specific time, usually a year (Iswani, 2019)

GRDP is the amount of remuneration received by production factors who participate in the production process in a region/region over a specific time period (a year). (Ramadhani Ashari, Sudarusman, Utomo Prasetyo, Tinggi Ilmu Manajemen YKPN, & -Indonesia, 2020)

### **Non-tax State Revenue (PNBP)**

Non-tax State revenue, abbreviated as GNP, are obligations paid by individuals or elements for the maintenance or use of the wealth and freedoms acquired by the State, taking into account the regulations of the laws, which are the center of government, income outside income, tax provisions, and grants in the APBN system (Dita, 2019)

Starting with PNBP, PNBP management is the utilization of wealth in a government framework that includes administration, implementation, responsibility, and supervision to further expand administration, responsibility, and state revenue (Rusdi, 2021)

## **2. Materials and Methods**

This study's statistics assessment methodologies were inferential data and panel statistics regression evaluation. Associative studies are the study strategy that is consistent with the extent of explanation of this research. Associative studies are studies that seek to determine the relationship between two or more variables. based on the type of recordings and evaluation quantitative facts types (Sugiyono, 2016)

## **3. Results and Discussions**

### **Hypothesis check outcomes**

#### **a. The Contribution of Coal Export Performance To Gross Regional Domestic Product**

The Hausman test is used to determine if the fixed effect or random effect model is best. If the Chi-square probability is (0.05), the random effect is accepted; if the Chi-square probability is (0.05), the fixed effect is accepted. The following are the test findings from this study:

**Table 1 Hausman Test 1 Results**

Correlated Random Effects – Hausman Test

Pool: DATAPANEL

Test cross-section random effects

Test Summary	Chi-sq. Statistic	Chi-sq.d.f	Prob.
Cross-section random	71.556770	1	0.0000

**\*\*WARNING: estimated cross-section random effects variance is zero**

The Hausman test results in Table 1 indicated a random cross section value of  $0.0000 \leq 0.05$ , indicating that  $H_0$  was rejected and  $H_1$  was accepted, indicating that the right fixed effect model was employed to estimate panel data rather than random effects.

**Table 2 Fixed Effect Model 1 Results**

Dependent variable: GDRB?

Method: pooled least squares

Date: 10/03/23 Time 07:04

Sample: 2013 2022

Included observations: 10

Cross-sections included: 4

Total pool (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.336582	0.219686	33.66896	0.0000
COAL_EXPORT?	0.799274	0.036264	19.83430	0.0000
<b>Fixed Effects</b>				
<b>(cross)</b>				
_SUMSEL—C	0.116367			
_KALSEL—C	0.237743			
_KALTM—C	0.257757			
_KALTENG--C	0.220653			
<b>Effects Specification</b>				
<b>Cross-section fixed (dummy variables)</b>				
R-Squared	0.791970	Mean dependent var		11.75210
Adjusted R-Squared	0.790789	S.D. dependent var		0.414912
S.E. of regression	0.039820	Akaike info criterion		1.471423
Sum squared resid	0.053911	Schwarz criterion		1.218091
Log likelihood	75.2846	Hannan-quinn criter		1.379826
F-statistic	840.0546	Durbin-watson stat		1.956072
Prob (F-statistic)	0.000000			

Source: Data processed Eviews 10

The regression table calculations yielded statistically significant results on the probability value of coal export performance less than ( $0,0000 \leq 0,05$ ), implying that the variable of export coal performance has a significant and negative impact on the regional gross domestic product in the Kalimantan and Sumatra Territories.

**b. The Contribution of Coal Export Performance to Non-Tax State Revenue**

The Hausman test is used to determine if the fixed effect or random effect model is best. If the Chi-square probability is (0.05), the random effect is accepted; if the Chi-square probability is (0.05), the fixed effect is accepted. The following are the test findings from this study:

**Table 3 Hausman Test 2 Results**

Correlated Random Effects-Hausman test

Pool: DATAPANEL

Test cross-section random effects

Test Summary	Chi-sq. Statistic	Chi-sq.d.f	Prob.
Cross-section random	9.825174	1	0.0017

The Hausman test results in Table 1 reveal that the random cross section probability value is  $0.0017 \leq 0.05$ , indicating that  $H_0$  is rejected and  $H_1$  is accepted, indicating that the right fixed effect model is employed to estimate panel data rather than random effects.

**Table 4 Fixed Effect Model 2 Results**

Dependent variable: NON-TAX STATE?

Method: pooled least squares

Date: 10/03/23 Time 07:04

Sample: 2013 2022

Included observations: 10

Cross-sections included: 4

Total pool (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2011.623	3.223192	624.1090	0.0000
COAL_EXPORT?	0.963006	0.526957	2.827487	0.0175
<b>Fixed Effects</b>				
<b>(cross)</b>				
_SUMSEL—C	5.521930			
_KALSEL—C	5.917977			
_KALTM—C	16.80744			
_KALTENG--C	6.178005			
<b>Effects Specification</b>				
<b>Cross-section fixed (dummy variables)</b>				
<b>R-Squared</b>	0.767777	Mean dependent var		11.75210
<b>Adjusted R-Squared</b>	0.751862	S.D. dependent var		0.414912
<b>S.E. of regression</b>	1.388682	Akaike info criterion		1.471423
<b>Sum squared resid</b>	65.56686	Schwarz criterion		1.218091
<b>Log likelihood</b>	-66.64136	Hannan-quinn criter		1.379826
<b>F-statistic</b>	14.97930	Durbin-watson stat		1.956072
<b>Prob (F-statistic)</b>	0.000000			

Source: Data processed Eviews 10

The results of the regression table calculations, statistically showing a significant result on the probability value of coal export performance less than ( $0,0175 \leq 0,05$ ), then it can be concluded that the variable export performance coal has a significant and negative influence on the non-tax state revenue of the state in the Kalimantan and Sumatra Territories.

#### 4. Conclusion

According to the findings of the research, the performance of coal exports had a large and favorable impact on the regional gross domestic product and non-tax revenue of the state in the Kalimantan and Sumatra regions. This is consistent with the fact that the mining industry generated 5-8% of Indonesia's GDP during the last decade, with coal accounting for roughly 80% of the total. Non-tax state revenue contribution in 2022 is much higher than in the previous year. This growth is largely dependent on a number of factors, including commodity pricing, production volume, royalty percentage, and compliance with responsibilities.

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