

## **ABSTRACT**

*Ervin Bayu Prastito. Dynamics of the Relationship between Energy Consumption, Credit, and GDP in the Mining Sector in Indonesia, under the supervision of Dr. Ris Yuwono Yudo Nugroho*

*The mining sector plays a strategic role in the Indonesian economy, particularly as a provider of energy resources, industrial raw materials, and export commodities. The performance of this sector tends to be volatile due to fluctuations in energy consumption, the ongoing energy transition, sectoral financing, and policy dynamics. This study aims to analyze the dynamic response of the mining sector's gross domestic product (GDP) to shocks in fossil energy consumption, renewable energy consumption, and credit to the mining sector, as well as to identify the contribution of each variable in explaining variations in the mining sector's GDP in Indonesia. This research employs an explanatory quantitative approach using annual secondary time-series data covering the period from 1985 to 2024. The analytical method applied is the Vector Autoregression (VAR) model, which includes stationarity testing, optimal lag selection, cointegration testing, model stability testing, Impulse Response Function (IRF), and Forecast Error Variance Decomposition (FEVD). The findings indicate that shocks in fossil energy consumption generate relatively small fluctuations in the mining sector's GDP around its equilibrium level. Shocks in renewable energy consumption produce a negative response during the initial periods before gradually converging toward equilibrium, while shocks in mining sector credit also result in a negative short-run response. The FEVD results reveal that variations in the mining sector's GDP are initially explained predominantly by its own shocks, whereas the contribution of renewable energy consumption gradually exceeds that of fossil energy consumption, although it has not yet become the dominant source of variation. Therefore, energy consumption and mining sector credit have not yet become the primary determinants of mining sector performance in the short run. Nevertheless, both variables are expected to make greater contributions over the long run as the energy transition progresses, the quality of sectoral financing improves, and the global economic structure continues to evolve.*

**Keywords:** Mining sector GDP, energy consumption, mining sector credit, Vector Autoregression.

## ABSTRAK

Ervin Bayu Prastito. Dinamika Hubungan Konsumsi Energi, Kredit dan PDB Sektor Pertambangan di Indonesia, di bawah bimbingan Dr. Ris Yuwono Yudo Nugroho, S.E., M.Si,

Sektor pertambangan memiliki peran strategis dalam perekonomian Indonesia, terutama sebagai penyedia sumber energi, bahan baku industri, dan komoditas ekspor. Kinerja sektor ini cenderung volatil karena dipengaruhi oleh dinamika konsumsi energi, perubahan arah transisi energi, pembiayaan sektoral, serta faktor kebijakan. Penelitian ini bertujuan untuk menganalisis respons dinamis kinerja sektor pertambangan terhadap *shock* konsumsi energi fosil, konsumsi energi terbarukan, dan kredit sektor pertambangan, serta mengidentifikasi kontribusi masing-masing variabel dalam menjelaskan variasi PDB sektor pertambangan di Indonesia. Penelitian ini menggunakan pendekatan kuantitatif eksplanatori dengan data sekunder berbentuk *time series* tahunan periode 1985 - 2024. Metode analisis yang digunakan adalah *Vector Autoregression* (VAR) melalui beberapa tahapan, yaitu uji stasioneritas, penentuan lag optimal, uji kointegrasi, uji stabilitas model, *Impulse Response Function* (IRF), dan *Forecast Error Variance Decomposition* (FEVD). Hasil penelitian menunjukkan bahwa *shock* konsumsi energi fosil menghasilkan respons PDB sektor pertambangan yang relatif kecil dan berfluktuasi di sekitar titik keseimbangan. *Shock* konsumsi energi terbarukan memberikan respons negatif pada periode awal sebelum bergerak mendekati keseimbangan, sedangkan *shock* kredit sektor pertambangan juga menunjukkan respons negatif dalam jangka pendek. Hasil FEVD menunjukkan bahwa variasi PDB sektor pertambangan pada awal periode lebih banyak dijelaskan oleh *shock* variabel itu sendiri, sementara kontribusi konsumsi energi terbarukan mulai lebih besar dibandingkan energi fosil meskipun belum dominan. Dengan demikian, konsumsi energi dan kredit sektor pertambangan belum menjadi faktor penentu kinerja sektor pertambangan dalam jangka pendek, tetapi memiliki potensi kontribusi yang lebih besar dalam jangka panjang seiring dengan proses transformasi energi, peningkatan kualitas pembiayaan, dan perubahan struktur ekonomi global.

**Kata kunci:** PDB sektor pertambangan, konsumsi energi, kredit sektor pertambangan, *Vector Autoregression* (VAR).