

Energy Industry Repositioning and Economic Sustainability: The Incremental Role of Oil & Gas Reserves

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Abstract

The study examines the role oil and gas reserves in the context of repositioning global energy sector for economic sustainability. The economic sustainability of International Oil and Gas Companies (IOCs) was assessed by using non-financial metrics, while holding the financial metrics as control variables. This research is exclusively positioned due to the inclusion of average daily production per well (ADW), Average reserve per well (ARW). This is because no related research on value relevance has ever integrated these variables.

The economic sustainability and performance measurement of IOCs could be influenced by the regulators, investors and self-assessment for the assurance of continuous operational capability. To enhance performance efficiency, this article empirically estimated proved reserve, probable reserve, reserve replacement ratio (RRR), reserve life ratio (RLR), average daily production per well (ADW), Average reserve per well (ARW); over abnormal earnings, market value and cash flow of 120 international oil companies (IOCs) from 2012 to 2022 using longitudinal approach. This study uses the Fixed Effects Model (FEM) and Random Effects Model (REM) panel regression analysis, to assess the performance of IOCs in consideration of the plunging oil price during the period of assessment.

The Market value model in table 2 results indicates that probable reserve; reserve replacement ratio; reserve life ratio; average daily productions per well and average reserves per well ratio; possessed economic potential of influencing investment into IOCs. These market performance measures were statistically relevant when used for the determination of IOCs market value relative to investment purpose. The Abnormal earnings model in Table 3 reveals reserves life ratio as a resilient determinant of IOCs abnormal earnings. Other variables were found to be significantly irrelevant in the performance of abnormal earnings of IOCs. The Cash flow model results in Table 4 demonstrate the existence of impactful contribution

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relative to prove reserve; probable reserve; reserve replacement ratio; reserve life ratio; average daily productions per well and average reserves per well ratio concerning cash value of IOCs. It suggests the frequency with which IOCs replaces oil and gas reserves; a reflection of their potential in sustaining the future earnings.

Keywords: Proved reserve, Probable reserve, Performance measurement, Average daily production per well (ADW), Average reserve per well, reserve replacement ratio, reserve life ratio, IOCs, SEC¹