Understanding What Influences the Energy Transition: A Causal and Predictive Analysis of Return on Invested Capital (ROIC)

This research project examines the interplay between macroeconomic forces, commodity market dynamics, and the financial performance of companies navigating the global energy transition, with a focus on Return on Invested Capital (ROIC) as the primary performance metric. Moving beyond traditional stock price analysis, which often reflects market sentiment and short-term speculation, this study utilises firm-specific ROIC, calculated from publicly available 10-Q financial statements, to provide a more fundamental, operations-centric view of how the energy transition is impacting corporate value creation for the renewable energy sector.

Employing Structural Vector Autoregression (SVAR) for causal inference, and LSTM networks and XGBoost for predictive modelling, the research aims to uncover the direct causal pathways through which macroeconomic shocks (e.g., interest rate changes, inflation, GDP growth) and critical commodity price movements (e.g., oil, natural gas, transition metals like copper and lithium) fundamentally affect the ROIC of energy companies. Furthermore, the study develops predictive models to forecast future ROIC trends, offering forward-looking insights into the financial viability and capital efficiency of investments across the energy spectrum.

The findings will offer actionable intelligence for both investment firms and policymakers. For asset managers, understanding the causal drivers of ROIC will enable more robust fundamental analysis, strategic capital allocation towards high-performing energy segments, and enhanced risk management against transition-related financial headwinds. For governments, the insights will illuminate which external economic forces critically impact the fundamental profitability of energy transition initiatives, guiding the design of more effective, data-driven policies that foster sustainable growth and value creation in a decarbonising global economy.