Institutional Quality As A Possible Catalyst In South Africa's Electricity Supply And Foreign Direct Investment Nexus

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Overview

For most developing countries around the globe energy reliability has remained a persistent challenge throughout the last few decades. Energy reliability challenges – load shedding in this case has been a phenomenon since 2008 in South Africa and has reached a peak in 2023 when the country experienced 6950 hours of load shedding in a single year. Like many developing countries, South Africa's government uses foreign direct investment (FDI) as an instrument to increase development within their economy, however, electricity supply challenges are hindering the country's attractiveness for FDI. Adequate institutional quality conditions can assist in both improving electricity supply and market attractiveness. This study assesses the relationship between electricity supply and inward FDI in the presence of good institutional quality conditions. A structural Bayesian VAR is used in the study to obtain impulse response functions that indicate that the presence of positive institutional conditions initially has a positive effect on the electricity supply. The improvement in electricity supply then results in a positive effect on inward FDI.

Methods

This study uses a structural Bayesian Vector Autoregressive (BVAR) model for South Africa during the period 1996 to 2021. A sign restrictions identification strategy is used to identify structural parameters. The impulse response function (IRF) used in the study allows for clear economic interpretations of each shock that will contribute to answering questions regarding the origins of the shocks and the measurement of their relative importance in shaping recent inward FDI trends, furthermore the BVAR will assist in tracing the IRF of institutions on electricity supply and electricity supply on inward FDI. This study employs a Structural Vector Autoregressive (SVAR) model to the variables following Dieppe et al. (2016) method.

Equation 1

$$A_0 y_t = c + \sum_{p=1}^{n} A_p y_{t-p} + \epsilon_t, \epsilon_t \sim N(0, \mathrm{I}) \quad t = 1, \ldots, T$$

Where T is the sample size of the data set, n represents the lag order of the VAR and the invertible matrix of contemporaneous relationships between the variables are represented by A_0. A_p represents a n x n matrix of structural parameters at lag p while c is a n size vector that represents the constant terms. ϵ_t is a n x 1 vector of orthogonal structural shocks. When Equation 1 is multiplied by A_0^{-1} a reduced form VAR is gained which is suitable for a BVAR inference.

Results

Institutional Quality Shock: Good quality institutions stabilise markets. These institutions use market mechanisms to guide economic activity, investment in capital through mechanisms such as protection of property rights, regulatory quality and corruption control that overall have a positive impact on economic growth (Abdelbary et al., 2019; Ahmed et al., 2022; Carson et al., 2016). Through these market-related mechanisms a positive institutional shock can also contribute to improved electricity supply as shown in Venter and Inglesi-Lotz (2022). A 1 standard deviation in the institutional quality shock results in a 0.2% improvement in electricity supply on impact. The latter effect dissipates over time reaching a near steady state in the 8th period.

Electricity Supply Shock: South Africa is still in its industrial phase. Industrialisation plays a significant role in increasing economic growth and development within developing countries, although, this is strongly dependent on the supply levels of electricity and reliable access to such services (Ateba et al., 2019). Electricity plays a vital role in the production process complementing the other production factors - capital, labour, and natural resources. Reliable electricity supply therefore becomes a vital component for businesses to consider in maximising their profits as electricity as an input cost in their production process is also becoming more significant (Inglesi-Lotz et al., 2021). The reliability, accessibility, and affordability of electricity supply are factors that investors consider, hence impacting inward FDI. The IRFs results indicate that inward FDI has a positive and significant response to a positive shock in electricity supply within the 8 years.

Conclusions

In recent years South Africa has faced many economic hurdles such as low growth rates and high levels of unemployment specifically among young individuals. While attempting to regain sustainable economic growth and a just energy transition, South Africa has been facing an unreliable electricity supply since 2007. The consequences of an electricity supply shortage if significant enough affect various sectors in the economy hampering income generation, production, and output, ultimately affecting economic growth and development, and hampering FDI. FDI plays an important role in developing countries' economies as it assists with capital formulation and technological transfers, hence assisting in stimulating economic growth and the industrialisation of the host countries.

Determining how institutions can have an impact on the electricity supply inward FDI nexus is of interest to policymakers as institutional conditions can be a useful tool in designing and implementing policies that correct electricity supply shortages and attract investor confidence, ultimately assisting with unemployment challenges, stimulating economic growth and development. By employing a structural Bayesian Vector Autoregressive analysis this study examines the relationship between electricity supply and inward FDI given the presence of good institutional quality conditions. The results indicate that good institutional quality conditions can positively affect electricity supply in South Africa and given these results electricity supply positively affects inward FDI. Hence the relationship between electricity supply and inward FDI improves in the presence of good institutional quality conditions, with robustness checks confirming this.

The implications of the results found in this study underscore the complex interplay of institutional dynamics between electricity supply and inward FDI relationship in South Africa. This research highlights the need to integrate adequate institutional conditions that assist in implementing policies to address electricity supply and FDI objectives. Policymakers within the energy sector should give a clear directive to the markets regarding their long-term energy sustainability goals and how these goals will be implemented, clearly communicating to the investors in a transparent way.

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