THE IMPACT OF DIGITAL FINANCIAL INCLUSION ON ENERGY CONSUMPTION IN SUB-SAHARAN COUNTRIES

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Overview

Given the importance of the energy consumption in the global warming, the consternation which concerns the energy system will always be relevant in the coming decades. According to the (IEA, 2021) , the energy sector controls nearly three-quarters of the global co2 emissions which have increased global average temperatures to 1.1 °C with visible effects on climate. Meanwhile population is expected to grow up by almost 2 billion people to 2050, with increasing in income which will possibly increase demand for energy services. Also, to build up their national infrastructure, many emerging and developing countries are on the phase of an energy and emissions intense of urbanization and industrialization. Thereby, the new energy economy, the prosperous market opportunity for clean technology becomes a major new area for investment and international competition in advanced economies while in developing economies, people still lack access to electricity and clean cooking (IEA, 2021). For instance, according to the (IEA, 2021) the number of people without access to electricity is set to rise by 2% in 2021, with almost all the increase in the Sub-Saharan Africa. This energy gap has contributed to slow economic development and increased poverty. In recent years, the discussion around the implementation of an energy policy has taken place to deal with energy access challenges while limiting carbon emission, encouraging renewable energy and raising the possibility of tacking poverty. Indeed, how to promote the inclusive economic growth and reduce poverty has become a major subject of concern among both policy makers and the academia in the content. This has resulted in the initiative to promote financial inclusion in developing countries by the G-20 and the World Bank to reduce the level of poverty (Ozili, 2018). A developed and inclusive financial sector plays a great role by mobilizing savings and providing easy access to funds in consequence engendering growth (Alimi & Santos, 2015). All of this may require somehow the use of energy as the key to the production of goods and services.

Methods

To evaluate the impact of DFI on energy consumption in SSA countries, different panel data econometric techniques are used. A framework dynamic panel regression model to capture the relationship between digital financial inclusion and energy consumption is specified as:

$$ec_{it} = \beta_0 + \beta_1 ec_{i,t-1} + \beta_1 dfi_{it} + \beta_2 gdp_{it} + \beta_3 trade_{it} + \beta_4 indus_{it} + \beta_5 urb_{it} + \beta_6 fdi_{it} + \gamma_i + \varepsilon_{it}$$

Where ec_{it} represents the dependent variable and which stand for energy consumption, $ec_{i,t-1}$ represent the lagged dependent variable, dfi_{it} is the different proxies for digital financial inclusion, gdp_{it} represents gross domestic product per capita, $trade_{it}$ represents trade openness, $indus_{it}$ is a measure of industrialization, urb_{it} is the urbanization, fdi_{it} represent the foreign direct investment and γ_i is the unobservable country-specific characteristics.
The relationship between digital financial inclusion (DFI), energy consumption, economic growth is not always one way directed. It might include reverse causality especially in the case where a quality energetic or electric network in place boosts the development and the delivery of digital financial services. In fact, there exist already a certain level of endogeneity due the presence of the lagged dependent variable in the regression as an explanatory variable. These endogeneities potentially lead to biased estimated coefficients. Furth more, given large numbers of countries (N) relative to the time period (T) (Roodman, 2009) and given that the variables exhibit a strong persistence (Gnangnon, 2020). We propose to use a dynamic panel estimator based on GMM developed for such specifications suggested by (Arellano & Bond, 1991), and expanded to a system of equations with restrictions on the instrument by (Arellano & Bover, 1995) and (Blundell & Bond, 1998) to deal with these potential endogeneity. Compared to the first- differenced GMM estimator, the Sys-GMM is more efficient in the presence of persistent variable and weak instruments (Gnangnon, 2020). The check for the validity of the instruments Hansens test is applied to check for the

validity of the instrument used in the estimations; the Arrelano-Bond test for the first-order autocorrelation AR (1) and the second-order autocorrelation AR(2) is also applied to check the consistency of the Sys-GMM estimator (Arellano & Bond, 1991) (Oosthuizen & Inglesi-Lotz, 2022).

Results

Based on the Sys GMM result, we find mix effect of digital financial inclusion proxies on energy consumption. On one hand, the availability of digital financial services increases the energy consumption. While the usage dimension show mix result for example the beneficiaries of loan from commercial banks see their energy consumption decreases while deposit account holders at commercial banks see their energy consumption increase. Therefore, modern technology other than the one that has reduced the time and the cost of borrowers and credit from commercial bank has increased the energy consumption. In other word, innovative technology that allow banks to provide loans to individuals who would be excluded from loan if these new technologies do not exist is found supportive financing tool for energy efficiency.

Conclusions

Given the results and the current green development tendency, any policy encouraging Digital financial inclusion should also consider energy consumption. The study provides one of the solution to enhancing energy efficiciency. The government should reconsider digital financial inclusion as one of the solution to achieve the core agenda items for the economies to progress the world.

Referencess

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