The role of special economic zones (SEZs) in achieving sustainable development in Nigeria

Tijani Forgor, Oksana Stepannikova, Lali Chebukhanova

1 Moscow Financial and Industrial University "Synergy", Moscow, Russia
2 Peoples’ Friendship University of Russia (RUDN University), Moscow, Russia

Abstract. The development and implementation of Special Economic Zones (SEZs) has become one of the main directions of investment policies to many economies. The creation of SEZs is aimed at attracting foreign investment and boosting the entry of their manufacturers into the world market. This paper assesses the impact of SEZ programs on the sustainable development in Nigeria and define how SEZs contribute to employment and exports in selected sub-Saharan African countries. Furthermore, the effectiveness of certain types of financing in the main sectors and the level of their impact on sustainable development in Nigeria was analyzed. It was revealed that the mining sector financing methods do not seem to support or deliver on Nigeria’s development goals, making it completely ineffective given the issues identified as well as the sector’s contribution to improving the country’s socio-economic performance. In other words, Nigeria should create various mechanisms and models for financing its manufacturing and agro-industrial complex through the creation of SEZs, as well as create the necessary preferential regimes in these sectors that can attract and direct huge investments in the manufacturing agricultural industries of these sectors. The authors developed a model for the relationship of investment with these indicators in African countries. A model was used to determine the degree to which job growth (p) and exports (e) are dependent on investment in special economic zones (SEZs). They conclude that the investment in SEZs is positively associated with job growth and exports.

1 Introduction

Inclusive sustainable socioeconomic development is subject to global environment that is favorable for the flow of foreign investments. Among the prominent instruments for encouraging and promoting the flow of capital is Special Economic Zones (SEZs). Hence, over the past decades, many countries continue to implement policies aimed at attracting investment to their economies as Alhassan (2021) posits that access to finance is a major driver of growth. SEZs has brought a lot of benefits to many economies. The development and implementation of Special Economic Zones (SEZs) has become one of the main directions of the investment policies of many economies, which makes it possible to attract financial resources to the national economy on special (preferential) conditions. In some...
cases, the creation of SEZs can be aimed at attracting foreign investment and boosting the entry of their manufacturers into the world market. For instance, the analysis of SEZs in Poland by Ambroziak and Hartwell (2017) [3] demonstrated that SEZs facilitate development in underdeveloped regions of the country. Similarly, other scholars in their assessment of the impact of SEZs on regional growth found that the implemented industrial policy instruments have achieved significant positive results in the European Union (EU) [4].

SEZs generated over 135,000 jobs and trade worth more than $80 billion and contributed about 20% gross domestic product of Dubai [5]. Several scholars have posited that countries with ongoing SEZs programs stand to improve their firms’ probability of exporting as well as increasing export level and value of exports is high. For instance, Uminski and Nazarczuk (2018) [6] concluded in their study on the role of SEZ activities on the export possibilities of firms (within the zones) in Poland could not be acknowledged. But Davies and Mazhikeyev (2016) [7] revealed that SEZ businesses in open economies have a higher probability of about 25% more than countries without such programs and he argued further that SEZs can increase the value of exports especially in countries with barriers to import.

Nigeria, one of the major beneficiaries of foreign direct investment (FDI) in Africa, and the biggest of recipient in Sub-Saharan Africa according to UNCTAD 2021 Investment Report [8], despite the global economic downturn recorded an increased flow of FDI by 3.5% in 2020, which amounted to over $2.4 billion. Despite the surge in FDI flow, Nigeria needs SEZ programs to improve its exports of value-added goods. Also, SEZs policies will help attract investments to certain critical sectors such as agriculture given that most of the FDI flow to the mining and extraction sector, which over years have proven inefficient in creating jobs, but represent the major cause of currency exchange fluctuations due to capital flight, source of tax evasion through profit-shifting by multinational corporations. Although the concept of SEZs is not new and has been severely researched, however, the role of SEZs in attaining sustainable development in Nigeria on the one hand, and in Sub-Saharan African region in general has not been adequately studied. Thus, this paper aims to fill the gap in literature by assessing the impact of SEZs in achieving sustainable development in Nigeria and for that matter countries in the Sub-Saharan African sub-region.

This paper concludes that SEZs positively influence job creation and promotes exports, however, it is worth mentioning that the limited amount of data affected the outcome. Thus, further research must be conducted on the effects of SEZs on individual sectors of the Sub-Saharan African countries. The rest of the paper consists of 4 sections: the literature review studies relevant literature in the field of SEZ programs, the methods and material outline the methodology of the empirical study, the results define the findings of the study, and the conclusion section summarises the research results and opens other relevant related fields for further studies.

2 Literature review
3 Materials and methods

There are several special economic zones in Africa. For instance, in 1992, the Free Zone Program was created in Nigeria, which allowed the establishment of special economic zones in the country. Given the level of socioeconomic challenges coupled with debt vulnerabilities, commodity price fluctuations on the global market and so on, the government looks out for investment instruments that can help scale up long-term and sustainable development. Zeng (2021) espouses that if successfully implemented, SEZs attract numerous multinational firms and local companies and this helps it contribute to business investment, generate employment, and promote economic transformation. Thus, the SEZs model was created to accelerate the implementation of the Nigerian Industrial Revolution Plan (NIRP), which aims to increase job creation through value creation and to promote the export of manufactured goods (NIRP, 2014). In addition, in 2017, free trade zones were converted into SEZs under the Nigerian government's Made in Nigeria for Export (MINE) project, which aims to increase the contribution of industrial and export development in the country. It is estimated that there are currently about 42 SEZs operating in the Nigerian economy, and while some have achieved some relative success, many of them face problems such as inadequate funding, poor infrastructure network, poor availability of basic services, and intermittent energy supply. SEZs are the second most effective financial instrument (with 92%) in terms of analyzed factors and level of transparency. Investment decisions of the SEZ are tied to the external market, which affects the level of its reliability. However, several factors reduce the instrument's effectiveness, including possible political interference and corruption-related activities, which could jeopardize the growth of preferential treatment and incentives for investment. Joint Venture Agreement (JVA) and Production Sharing Agreement (PSA) were found to be the least effective. JVA scored 40% because the returns from these investments can be allocated to the most efficient sectors, however the associated corruption, embezzlement and mismanagement make it ineffective in stimulating investment development, so it is not surprising that most African countries are seizing to use this form of financing. The PSA gained 36% as this financial instrument is heavily influenced by external factors, increasing the vulnerability of the host country; associated with a high degree of tax evasion; low integration with the local economy; ensuring low employment (due to the requirements for
The skill level of the labor force; high corruption (which is facilitated by the low transparency of mining transactions. Mining sector financing methods do not seem to support or deliver on Nigeria's development goals, making it completely ineffective given the issues identified as well as the sector's contribution to improving the country's socio-economic performance.

In other words, Nigeria should create various mechanisms and models for financing its manufacturing and agro-industrial complex through the creation of SEZs, as well as create the necessary preferential regimes in these sectors, which are able to attract and direct huge investments to the manufacturing and agricultural industries of these sectors.

Approbation of the methodical approach proposed by the author was tested on the example of the analysis of the effectiveness of certain types of financing in the main industries and the level of their impact on sustainable development in Nigeria. The analyses are presented in Table 1.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Type of funding</th>
<th>The level of efficiency of sustainable development financing</th>
<th>Expected effect on investment development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>Joint Venture Agreement (JVA)</td>
<td>Ineffective</td>
<td>Due to the government's inability to meet its financial obligations under the agreement. This industry has not and cannot take into account Nigeria's development needs due to excessive corruption in the sector and its inability to create jobs for youth.</td>
</tr>
<tr>
<td>Production</td>
<td>Production Sharing Agreement (PSA)</td>
<td>Ineffective</td>
<td>This agreement benefits the companies, not the country, given the agreed percentages of equity participation.</td>
</tr>
<tr>
<td>Manufacturing and processing</td>
<td>Special Economic Zones (SEZs)</td>
<td>Effective</td>
<td>It has great prospects in increasing the contribution of the manufacturing sector to socio-economic growth. Create jobs and create employment that will reduce unemployment and reduce poverty.</td>
</tr>
<tr>
<td>Preferential treatment and benefits such as tax breaks or incentives</td>
<td>Effective</td>
<td>This could serve as an incentive for manufacturing activities and importing the necessary production equipment.</td>
<td></td>
</tr>
<tr>
<td>Manufacturing and processing</td>
<td>Investment incentives such as tax incentives, subsidies and grants</td>
<td>Effective</td>
<td>This could help attract enough SEZs to the agro-industrial complex, as well as other private investors. Incentives will create and ensure a competitive atmosphere and tax incentives will help in the import of modern agricultural implements. Increase exports of manufactured goods to improve the balance of payments, which is largely dependent on the price of crude oil and other commodities.</td>
</tr>
<tr>
<td>Special Economic Zones (SEZs)</td>
<td>Effective</td>
<td>This could facilitate the transfer of technology and best practices and encourage some form of technical cooperation.</td>
<td></td>
</tr>
<tr>
<td>Agroleasing</td>
<td>Effective</td>
<td>This will provide essential agricultural machinery and technology to help increase production, prevent crop losses and stimulate agribusiness, especially among small businesses.</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ own construct.
As shown in the table above, mining sector financing methods do not seem to support or deliver on Nigeria's development goals, making it completely ineffective given the issues identified as well as the sector's contribution to improving the country's socio-economic performance. In other words, Nigeria should create various mechanisms and models for financing its manufacturing and agro-industrial complex through the creation of SEZs, as well as create the necessary preferential regimes in these sectors, which are able to attract and direct huge investments in the manufacturing agricultural industries of these sectors. Thus, the advantages of the sustainable development of the Nigerian economy are based on the following factors: the country is rich in natural resources, such as oil and other mineral resources; relations with investors, including foreign ones, where a production sharing agreement (PSA) is in force, have been legally worked out. However, Nigeria could improve the situation if it renegotiated contracts and reallocated profits to finance other sectors, such as agribusiness and manufacturing.

Despite the existence of a network of SEZs in the country, they are currently underdeveloped due to problems that undermine this financial instrument. It should be noted that although agriculture remains the main source of gross domestic product (GDP) in Nigeria, nevertheless, it does not have effective financial instruments for its investment development. The lack of specific and localized mechanisms for financing agricultural production affects its efficiency, and this is due to financial constraints caused by low access to finance. Although the country has used preferential treatment to stimulate growth in various sectors, however, the investment instruments need to be modified and tailored to the local sector and the country's long-term sustainable development goals.

4 Results

In assessing the role of special economic zones (SEZs) in achieving sustainable development in Sub-Saharan Africa, a cross-country dataset (table 2) was used to assess the relationship between investment amounts in SEZs and exports and job creation. The impact of investment in SEZs on job creation and value added for exports has been a major focus of research by UNCTAD and other scholars. For example, Vacflores (2011) [13] found in his study of Latin American economies that investment flows have a positive effect on job creation in host countries. In addition, Karim and Yin (2015) [14] found that private investment such as SEZs significantly contributes to employment and productivity (leading to increased export opportunities) in Malaysia. Finally, Sultan (2018) assessed the relationship between investment and exports in India [15].

Table 2. Statistics on SEZs in SSA

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>The amount of investment in the SEZ (in mln. US$)</th>
<th>Number of jobs</th>
<th>Export (in mln. US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Ghana</td>
<td>160.00</td>
<td>500000</td>
<td>339.00</td>
</tr>
<tr>
<td>2016</td>
<td>Kenya</td>
<td>90.00</td>
<td>9828</td>
<td>1,940.00</td>
</tr>
<tr>
<td>2017</td>
<td>Ethiopia</td>
<td>160.00</td>
<td>60000</td>
<td>369.00</td>
</tr>
<tr>
<td>2018</td>
<td>Nigeria</td>
<td>3,800.00</td>
<td>500000</td>
<td>8,150.00</td>
</tr>
<tr>
<td>2019</td>
<td>South Africa</td>
<td>1,120.00</td>
<td>25700</td>
<td>3,500.00</td>
</tr>
<tr>
<td>2020</td>
<td>South Africa</td>
<td>2,760.00</td>
<td>300000</td>
<td>5,810.00</td>
</tr>
</tbody>
</table>

Source: Cross Country Data [14]

Based on the considered methodological approaches on the relationship between investment in SEZs and exports, as well as job creation, the authors developed a model for the relationship of investment with these indicators in African countries. Using UNCTAD...
For selected African countries such as Nigeria, Ghana, Ethiopia, Kenya and South Africa, the ability of investment in SEZs to influence job creation and exports was tested. Thus, expanding the models of Sultan (2018) [14] as well as Karim and Yin (2015) [15], the model below was modified (equations 1 and 2) and used to determine the degree to which job growth \( (p) \) and exports \( (e) \) are dependent on investment in special economic zones (SEZs) as shown in the equations below [14].

\[
\ln p_t = \delta_0 + \delta_1 \ln SEZ_t + v_t \tag{3}
\]

\[
\ln e_t = \delta_0 + \delta_1 \ln SEZ_t + v_t \tag{4}
\]

where \( t \) is the time interval, \( \delta_0 \) - is the intersection point, and \( \delta_1 \) - is the slope coefficient, which determines the elasticity of jobs \( (p) \) and exports \( (e) \) with respect to the volume of investment in the SEZ (SEZ\(_i\)) at time \( t \). In stands for natural logarithm. Stochastic \( v \) is considered to be independently and normally distributed with zero mean and constant variance.

The SEZ one-period lag indicates that there is usually a delay between when investment is available in SEZs and when they begin operations and actual production. Thus, the proposed econometric models are log-linear to better estimate the expected sign of the explanatory variable than linear models. In addition, log-linear models can reduce the degree of heteroscedasticity. First, Pearson's correlation was used to test the relationship between variables, and the results are presented in Table 3.

<table>
<thead>
<tr>
<th></th>
<th>Jobs</th>
<th>Export</th>
<th>SEZs investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs</td>
<td>1</td>
<td>0.377</td>
<td>0.521</td>
</tr>
<tr>
<td>Export</td>
<td>0.377</td>
<td>1</td>
<td>0.972</td>
</tr>
<tr>
<td>SEZs investments</td>
<td>0.521</td>
<td>0.972</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Computed by authors.

The Pearson correlation coefficients indicate that there is a significant relationship between SEZs: job creation (0.521) and exports (0.972). As shown above, there is a higher correlation between SEZs and exports, which confirms the findings of Fernando and Edmundo (2018) [18] in their study on the impact of SEZs on regional socio-economic development. In addition, the dependence of job growth \( (p) \) and exports \( (e) \) on investment in SEZs was tested using the economic model defined above (the results are presented in Table 4).
Table 4. Dependences of SEZ creation on exports and jobs

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Mean</th>
<th>Standard Error</th>
<th>F</th>
<th>Pr &gt; F</th>
<th>T</th>
<th>Pr &gt;</th>
<th>t</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs (p)</td>
<td>1094.377</td>
<td>341.869</td>
<td>1.987</td>
<td>0.0</td>
<td>24</td>
<td>3.201</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Export (e)</td>
<td>0.444</td>
<td>0.023</td>
<td>49.876</td>
<td>0.019</td>
<td>19.484</td>
<td>0.003</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed by authors.

Therefore, investment in SEZs is positively associated with job growth and exports, given that SEZ investment ratios are statistically significant at the 1% level with elasticities of 1,094.37 and 0.444 for job and export growth, respectively. The overall p value for the F-statistic of 0.047, as well as the separate 0.024 and 0.019 employment and exports, respectively, are statistically significant, and the R-squared value of 0.972 indicates that SEZ investment may drive variation in job growth and exports. The result confirms the Wang (2013) [19] that uncovered significant positive spillovers on exports including other things in China. Similarly, Busso et al. (2013) [20] in their study revealed substantial improvements in the rate job creation due to SEZ programs expansion in the United States. The results show that higher growth in investment in SEZs in the region leads to increased employment opportunities, both directly and indirectly because:

1) Foreign production and agribusiness are motivated by profit maximization to increase their production needed for local consumption as well as exports. Thus, the demand for cheap labor is increasing in order to reduce the cost of production and allow enterprises to remain competitive both locally and globally;

2) the development of SEZs can increase the demand for goods and services of local businesses in the form of resources, materials for production, which, consequently, creates jobs in local industries. In addition, investment in SEZs boosts exports due to the higher value added [21] generated by these companies, which increases countries’ trade balances through export substitution programs.

5 Conclusions

This paper investigates the impact of SEZs in achieving sustainable development in Nigeria. There are various forms of SEZs in different sectors of the country and the strategy, policy, etc. depends on the variation of the location and the timing of their entry. In the line with the objective of this study, a model was to ascertain the causal effects of SEZs on jobs and exports in selected sub-Saharan African countries. It was uncovered based on the model results that although SEZs programs in sub-Saharan economies positive impact on job creation and exports, however, the effect is generally minimal due to insufficient data available. The major limitation encountered was dataset as it was difficult to collect to get enough for this model to be tested. Nonetheless, the paper concludes that investments in SEZs contribute to an increase in exports, which can:

1) improve the trade balance of these countries, thereby attracting foreign exchange by increasing exports;

2) increase the investment potential of these countries by attracting more foreign investors;
3) have a positive impact on macroeconomic indicators, such as inflation, exchange rates, etc.

Thus, the model showed that the introduction of SEZs in these countries (mostly in the manufacturing and agricultural sectors), by adapting to the local economy, can stimulate the development of local businesses, increase a positive trade balance, and attract foreign capital to African countries, and, consequently, increase employment and contribute to the solution of the main social problems. - economic problems - reduction of unemployment and poverty. The findings of this paper are consistent with Zeng (2016) [22] that estimated SEZs to create over 350,000 new jobs after attracting about $2.6 billion in Bangladesh. Other scholars like Dorozynski et al. (2018) [23] projected that SEZs contributed about 72% new job in Poland, while Akinci and Farole (2011) [24] indicated that SEZ programs spur industrialization and job creation by transforming the economy of Dominican Republic from agricultural reliance to manufacturing, which led to the creation of over 100,000 jobs in that sector. Thus, SEZs have the potential to facilitate and promote sustainable development in Nigeria, and this could help the country in achieving sustainable socioeconomic growth. This paper contributes to the literature of SEZs and its effects on Nigeria, on the one hand, on sub-Saharan African region on the other hand and calls for further studies on the causality effect of SEZs on jobs and exports in the various sectors of sub-Saharan African countries.

6 Funding

This paper has been supported by the RUDN University Strategic Academic Leadership Program.

References


