

Do Special Economic Zones foster economic development?

Evidence from South Africa

Matthew Amalitinga Abagna,¹ Ronald Davies,² Nadine Riedel,³ Nora Strecker,⁴ and Biniyam Gezahegn Worku⁵

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Abstract: This paper evaluates the effectiveness of Special Economic Zones (SEZs) as instruments of economic development in South Africa. Drawing on rich administrative tax data and employing a difference-in-differences identification strategy, we examine how SEZ participation affects firm-level outcomes, including exports, investment, employment, and productivity. Contrary to the common expectation that SEZ participation boosts firm performance, the results suggest that SEZ firms generally underperform their non-SEZ counterparts. In particular, self-reported SEZ firms exhibit significantly lower export performance and reduced productivity. Although other performance indicators, such as total assets, employment, and sales, are statistically insignificant, their estimated coefficients consistently suggest weaker outcomes for SEZ firms. Importantly, the negative impact on exports is more pronounced for small SEZ firms, while larger firms report higher wage bills. These findings suggest that, in the South African context, SEZs are not meeting their developmental objectives, highlighting the need for more targeted and better-enforced industrial zone policies.

Keywords: Special Economic Zones, tax policy, firm performance, administrative data, difference-in-difference estimation, economic development

JEL classification: F14, H25, O25, R58

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1 Introduction

Special Economic Zones (SEZs) have emerged as a prominent tool of industrial policy in developing countries, marketed as catalysts for structural transformation, export diversification, job creation, and urbanization. By offering targeted incentives such as tax holidays, customs exemptions, and streamlined regulations, SEZs are designed to attract both domestic and foreign investment—particularly in regions with limited prior industrial activity (Zeng 2021; Lu et al. 2019). Inspired by successful models in East Asia, especially China, many African countries have adopted SEZ strategies in the hope of replicating similar outcomes (UNCTAD 2019). Yet, the developmental impacts of SEZs remain highly context dependent, and empirical evidence from the African continent remains sparse and inconclusive.

South Africa presents a timely and policy-relevant case to examine the broader developmental implications of SEZs. Following the enactment of the SEZ Act in 2014, the country repurposed its existing Industrial Development Zones (IDZs) and established several new SEZs, with the explicit objective of addressing chronic unemployment, institutional inefficiency observed under the IDZ programme, regional disparities, and underperformance in the manufacturing sector (DTIC 2020). Supported by substantial public investment and strong political commitment, these zones are envisioned as engines of inclusive and sustainable development at both local and national levels. However, South Africa continues to grapple with entrenched economic challenges, including persistently high unemployment, especially among young people, widespread poverty, and stark income inequality (IMF 2025). Given this disconnect, an important question emerges: to what extent have SEZs in South Africa fulfilled their development promise?

This paper contributes to this literature gap in the context of South Africa by providing a causal analysis of the economic impacts of SEZs in South Africa using a quasi-experimental design. Exploiting spatial and temporal variation in SEZ implementation across the country, we estimate the effects of SEZ establishment on local economic development and firm behaviour. Specifically, we used the detailed matched firm panel administrative tax data from the South African Revenue Service (SARS) and the National Treasury (NT). This dataset has information on individual firm corporate income tax returns, employees, Payroll Certificates, Customs, and Value-Added Tax (VAT) data. We also merged this dataset with the location of the SEZs (municipal, district, and province of the SEZ). We examine how SEZ designation affects firm behaviour and local economic development using a range of outcomes, including export and import volumes; profits; gross sales; assets; capital investment; investment in property, plant, and equipment (ppe); wages; employment; and productivity.

In addition, we propose a novel approach to identifying SEZ firms that goes beyond reliance on self-reported firm registries. We develop an alternative indicator for an SEZ's firms based on

the geographic location of their employees. This alternative identification approach enables us to detect firms benefiting from SEZ-related preferential tax reductions and incentives without formally registering as SEZ firms or being physically located within an SEZ. And this strategy enhances the accuracy of SEZ impact evaluations by capturing de facto beneficiaries who are often overlooked in administrative records.

Methodologically, we examine the impact of SEZs on economic growth and firm behaviour in South Africa, using a difference-in-differences (DiD) estimation strategy that compares firms operating within SEZs to similar firms outside SEZs across a range of economic indicators. This approach enables us to evaluate how SEZ participation affects firm dynamics, including exports, investment, and employment, under the key assumption of parallel trends between treated and control firms. We classify SEZ firms using both self-reported data and employee workplace locations, and rely on the exogeneity of SEZ placement, driven by government decisions rather than firm-level choices, to strengthen causal inference. Notably, many SEZ firms in our sample were established prior to the zone designation, which mitigates concerns about selection bias. To enhance robustness, we also analyse post-SEZ entrants, comparing firms established within SEZ areas with those founded outside.

The results indicate that firms identified as operating within SEZs generally underperform compared to non-SEZ firms. Contrary to the conventional expectation that SEZ participation enhances firm performance, both self-reported SEZ firms and those identified based on employee workplace location, at least in the South African context, SEZs are not fully achieving their intended developmental objectives. Specifically, firms operating within SEZs tend to exhibit lower levels of export and productivity compared to their non-SEZ counterparts. Notably, we observe a significant variation in the impact of SEZs on export participation depending on the method used to identify firms. Self-reported SEZ firms exhibit significantly lower export performance compared to non-SEZ firms. Specifically, self-reported SEZ firms demonstrate a statistically significantly lower export performance compared to their non-SEZ counterparts. Although other performance metrics—such as total assets, employment, productivity, and sales—remain statistically insignificant, their coefficients still suggest lower performance. Interestingly, this negative impact of SEZs gets even stronger for small self-reported SEZs firms, while large self-reported SEZ firms report higher wage bills.

However, firms identified by their employees' workplace locations demonstrate more positive outcomes. Location-based SEZ firms achieved higher gross sales, greater asset accumulation, and more employment contracts compared to firms outside designated SEZ areas. This positive effect is especially strong among small location-based SEZ firms. These small firms report higher gross sales, increased investment in ppe, higher employment levels, and improved productivity. Conversely, large location-based SEZ firms tend to exhibit higher import volumes and greater investment in ppe, but perform less well across other metrics. This negative impact of

the SEZs has become even stronger for firms that have self-reported as SEZs and are located in the right locations. In general, while SEZs have a limited impact on international trade and the level of productivity, they significantly enhance domestic economic performance, particularly for small firms.

Beyond the aggregate effect, we also find that firm ownership and size shape the effectiveness of SEZs: domestically owned firms generally outperform foreign-owned firms within SEZ-designated areas, particularly in terms of sales and productivity, while small foreign-owned firms show higher net profits, assets, employment contracts, and productivity but are less export-oriented than their domestic counterparts. These results suggest that smaller domestic firms are better positioned to leverage SEZ incentives in South Africa. Furthermore, regardless of the identification method, firms that operated outside SEZs and then joined and remained within SEZs perform better than firms that have never joined or joined after the establishment of the SEZs. Additionally, the results from flip-flopping also suggest that firms are not primarily driven by profit or monetary incentives when choosing to enter SEZs, indicating that the current SEZ-related benefits are inefficient at attracting investments or that the hidden costs of operating within SEZs are significantly higher than those of operating outside of SEZs. Instead, their participation may be motivated by non-monetary benefits linked to SEZs, such as better access to infrastructure, resources, or government services, which enable the firms to cut costs and improve productivity.

Although SEZs in South Africa do not appear to have a significant impact on promoting economic development, SEZs facilitate economic growth through several key mechanisms that are well documented in the literature. Three core channels—investment attraction and industrial upgrading, job creation and labour market development, and export diversification and integration into global value chains (GVCs)—stand out as particularly significant.

First, SEZs are designed to attract investment and stimulate industrial upgrading by offering targeted incentives such as tax breaks, customs duty exemptions, and simplified regulatory frameworks. These incentives lower operational costs and help firms overcome entry barriers, thereby promoting business formation and industrial clustering. As highlighted by Zeng (2015) and Farole (2011), SEZs have been particularly effective in countries like China and Vietnam, where they facilitated rapid industrialization and foreign direct investment (FDI) inflows. In South Africa, SEZs have been implemented with similar objectives, aiming to draw investment into underdeveloped regions and catalyse manufacturing activity (DTIC 2020).

Second, SEZs contribute to employment generation and labour market development. By attracting firms to designated zones, SEZs create concentrated employment hubs, particularly for low- and semi-skilled workers. This mechanism is supported by empirical findings from Borusyak et al. (2021) in Cambodia, Lu et al. (2019) and Wang (2013) in China, and Picarelli

(2016) in Nicaragua, which show that SEZs led to increased employment and improved household welfare in the SEZs located in municipalities. In South Africa, SEZs are explicitly aimed at reducing high unemployment, especially among the youth. Our estimates suggest that small firms located within SEZs have shown significant employment and wage gains, while large SEZ firms exhibit more limited labour market impacts. These patterns reflect broader concerns about job quality and the need for complementary skills development policies to enhance SEZ labour market outcomes in the context of South Africa.

Third, SEZs are widely considered instruments for promoting export diversification and integrating companies into global value chains. By providing access to world-class infrastructure, trade facilitation services, and reduced trade barriers, SEZs can enhance firms' export capacity and competitiveness. In China, SEZs played a pivotal role in transforming the country into a global export powerhouse (Wang 2013; Lu et al. 2019). Similarly, Schminke and Van Biesebroeck (2013) documents that regional preferential policies in China boosted both the volume and destination diversity of exports. In contrast, SEZs in South Africa have so far struggled to replicate these outcomes. Our results show that firms located in SEZs—especially those identified by self-report—often exhibit lower export performance than their non-SEZ counterparts, suggesting weak GVC integration and limited trade spillovers. This disturbing finding suggests the need for export-supportive infrastructure, trade facilitation, and institutional coherence for SEZs to function as export hubs.

This study contributes to the growing body of literature that examines the local economic impacts of SEZs in developing countries. Two key studies from China provide the foundation for this work: Wang (2013) finds that SEZs significantly boost foreign direct investment, agglomeration, and wages in host municipalities, while Lu et al. (2019), using detailed firm-level and administrative data, show that SEZs enhance capital investment, employment, productivity, and firm counts. These findings establish SEZs as important drivers of local development in China. However, the distinctive institutional and infrastructural context of the country limits the generalizability of these results to other lower-income settings with different governance structures. This study addresses that limitation by offering the causal evidence on how SEZs influence local economic outcomes in South Africa, contributing to a more context-sensitive understanding of place-based policies in the African context.

More broadly, our paper contributes to research on place-based industrial policy and regional development in low- and middle-income countries. For example, Koster et al. (2019) find that science parks in China increase local wages and productivity but can lead to job displacement. In India, Cheesman (2012) reports that Export-Oriented Units (EOUs), a variant of SEZs, generate more technological and skill spillovers than traditional SEZs. Yet, findings across the literature are mixed. Studies such as Alkon (2018) and Görg and Mulyukova (2024) do not find measurable impacts of SEZs on productivity or broader economic growth outside the bound-

aries of the zone. In contrast, other studies, such as Hyun and Ravi (2018) and Gallé et al. (2022), show that SEZs promote firm formalization, increase local productivity, and stimulate manufacturing and service employment in adjacent areas. On the other hand, Rothenberg et al. (2017), examining Indonesia's Integrated Economic Development Zone programme, find no impact on firm entry, output, or welfare, highlighting that success depends heavily on policy design and implementation.

In Africa, rigorous empirical evidence on SEZs remains limited. While existing descriptive research suggests that SEZs have generally underperformed, few studies offer causal analysis. Abagna et al. (2025), Farole and Kweka (2011), Farole and Sharp (2017), and Newman and Page (2017) attribute the underwhelming results to weak institutions, poor integration with local economies, and implementation challenges. However, these assessments often lack quantitative evaluation. This paper helps fill that gap by providing subnational causal estimates of SEZ effects on economic development in South Africa, thereby contributing new empirical insights to the African and global evidence base on place-based industrial strategies.

The remainder of the paper is structured as follows. Section 2 offers a brief overview of SEZ policies in Africa. Section 3 describes the data sources and construction. Section 4 outlines the empirical strategy and addresses key identification challenges. Section 5 presents the main results, including an analysis of heterogeneity across firm types and robustness checks. Section 6 concludes with a summary of findings and policy implications.

2 SEZs in South Africa

South Africa's SEZ programme has undergone significant evolution over time. It began in 2000 with the launch of the IDZ initiative under the Manufacturing Development Act, which primarily focused on promoting export-oriented activities near coastal ports to capitalize on logistical benefits. However, a 2010 policy review highlighted major shortcomings, including weak investor engagement, inadequate planning, and poor coordination among government agencies. These issues led to a series of reforms, ultimately culminating in the passage of the Special Economic Zones Act (Act 16 of 2014). This legislation marked a turning point by expanding the programme's scope, converting existing IDZs into SEZs, and establishing a stronger legal and institutional framework to support the creation of new zones nationwide, including in inland areas. The shift signalled a more integrated approach, aligning SEZ development with broader national goals such as industrial diversification and more equitable regional growth.

In transitioning from IDZs to SEZs, South Africa has moved towards a more integrated and comprehensive spatial industrial policy, one that not only promotes export-led growth but also aims to stimulate inclusive regional development and improve the country's global competitiveness. The SEZ Act No. 16 of 2014 under the new National Industrial Policy Framework (NIPF)

and National Growth Path (NGP) formalized the establishment of SEZs, defining them as geographically designated areas intended for specific economic activities, supported by special regulatory frameworks and systems that differ from those applicable in the rest of the country (DTIC 2020). The 15 SEZs established following the SEZs Act in 2014 are either sector-specific or multi-product in nature and are generally classified into the following categories:

Free port: A duty-free SEZ located around the ports where imported goods are unloaded for value-adding and could be stored, repacked, or processed subject to the customs import procedures.

Free Trade Zones: Designated duty-free zones that provide facilities for storage, distribution, and light manufacturing or value-adding activities, primarily aimed at exports from within the SEZ.

IDZs: Industrial areas developed to attract both domestic and foreign direct investment in value-added, export-oriented manufacturing industries and related services.

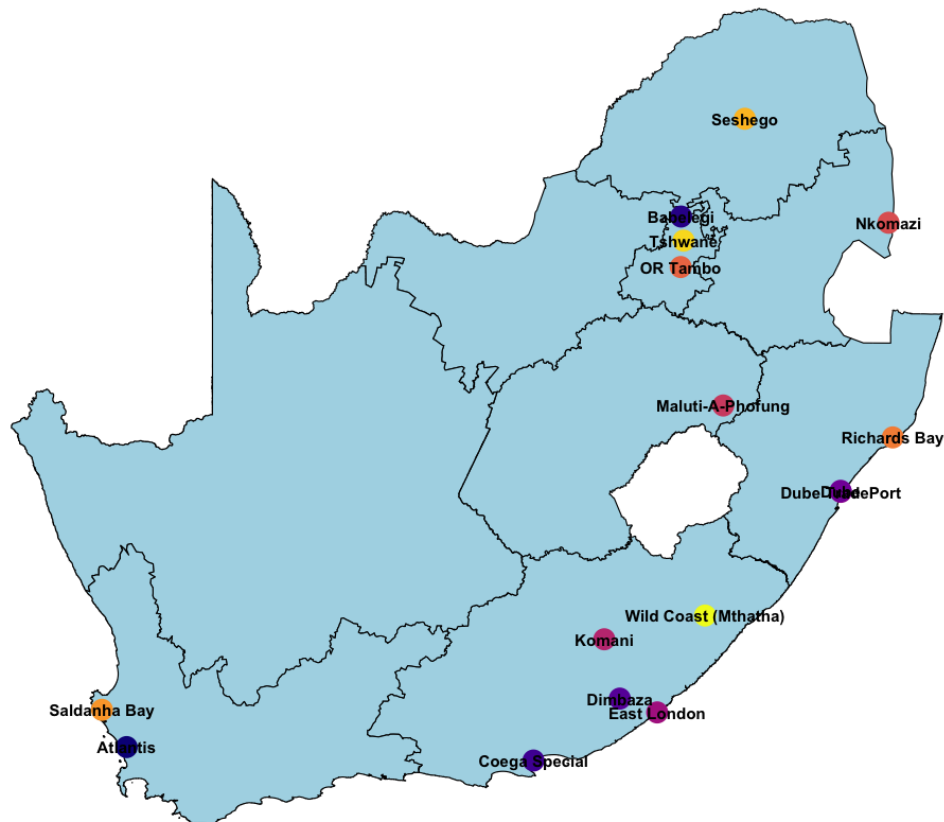
Sector Development Zones: Zones dedicated to the growth of specific sectors or industries by providing tailored infrastructure, incentives, and support services. These zones are primarily export focused and aim to enhance competitiveness in targeted sectors.

SEZs in South Africa offer a range of targeted incentives designed to attract investment, boost industrial activity, and enhance the competitiveness of firms operating within designated zones. Notable incentives include (i) a preferential corporate income tax rate of 15% for businesses operating within SEZs in contrast to the 28% flat corporate income tax rate; (ii) building allowance for infrastructure development within SEZs; (iii) employment tax incentive to promote job creation; (iv) designation of customs-controlled areas with simplified customs procedures; and (v) Section 12I tax allowance of new and existing industrial projects involving new manufacturing assets or upgrades and expansions of existing operations. Unlike other countries, for SEZ firms in South Africa to qualify for these incentives, they must (i) be physically located within areas designated as SEZs; (ii) conduct at least 90% of their operations within the SEZ; (iii) receive formal approval and registration from the SEZ Advisory Board; and (iv) operate within strategic sectors prioritized for SEZ development, including manufacturing, agro-processing, renewable energy, automotive components, ICT, electronics, logistics, and value-added services.

South Africa's SEZs are strategically located across both coastal and inland provinces to support balanced regional development and leverage comparative advantages, as shown in Figure 1. Coastal SEZs, such as the Coega SEZ in the Eastern Cape, the Dube TradePort SEZ in KwaZulu-Natal, and the Saldanha Bay SEZ in the Western Cape, benefit from proximity to ma-

for ports, facilitating trade and export-oriented manufacturing. Inland SEZs, including Musina-Makhado SEZ in Limpopo and the OR Tambo International Airport SEZ in Gauteng, are positioned to stimulate industrial activity in landlocked regions and improve connectivity to regional and global markets. This spatial distribution reflects a deliberate policy effort to reduce regional inequalities, attract investment to underdeveloped areas, and create industrial hubs that align with local economic strengths and infrastructure networks.

Figure 1: Geographical distribution of operating Special Economic Zones in South Africa



Source: Produced using QGIS version LTR3.44, available at <https://www.qgis.org/>, with shapefiles from <http://www.geoboundaries.org/> (Runfola et al. 2020).

3 Data description and SEZ firm identification

The analysis is based on detailed administrative tax data from the South African Revenue Service and the National Treasury, using the SARS-NT Matched Firm Panel (STMF) dataset. This merged dataset constitutes Corporate Income Tax (CIT), Employee Income and Payroll Certificates (IRP5), Customs, and Value-Added Tax (VAT) data. In addition to the STMF, we have also been able to merge the STMF with administrative datasets of the locations of the SEZs (municipal, district, and province of the SEZ). The datasets are provided at the National Treas-

surey Secure Data Facility (SA-TIED) in Pretoria and were accessed between January 2025 and December 2025.

We have implemented several restrictions on the analysis datasets to ensure the robustness of our sample. Specifically:

Dormant firms: We have excluded firms that are classified as dormant firms by the SA-TIED.

Minimum size criteria: Firms must meet a minimum size requirement, which includes (i) positive labour cost of firms; (ii) non-missing and positive wage expenses; (iii) non-missing and positive wage expenses and non-wage employee benefits such as pension and medical contributions; (iv) non-negative and non-missing turnover and asset values.

Time consistency: Firms must be observed for at least three consecutive years in the National Treasury dataset.

Analysis period: Although the dataset contains information dating back to 2008, we restricted our analysis to the period from 2017 to 2020. This timeframe aligns with the effective implementation of the SEZ act in 2016 and the beginning of tax declarations by firms operating within SEZs in 2017. Furthermore, we excluded the period following the COVID-19 pandemic to avoid distortions in the data caused by the crisis.

As shown in Table 3, applying the above restrictions has significantly reduced our datasets by nearly 90%, shrinking it from 9.11 million firm–year observations to 921,101.

One of the key contributions of this study is the introduction of an innovative method to identify firms operating within SEZs. We employ two complementary approaches: self-reporting and location-based identification. The self-reporting approach is based on the firm's explicit declaration of its SEZ status through the CIT filings (ITR14). A firm is identified as a self-reported SEZ firm if a firm (i) indicated eligibility for a preferential corporate tax rate granted to firms located in SEZs under Section 12R (ITR14_c_sezqualcomp); (ii) is located in an area identified as an SEZ, stating the name of the SEZ in which it is located (ITR14_c_othersezloc); (iii) declared that the majority of its income is generated from activities within an SEZ (ITR14_c_mostincinsez); (iv) claimed tax deductions for construction activities within an SEZ (ITR14_t_deb_sezbld); and (v) reported that its core business or services are conducted within an SEZ (ITR14_c_busorserinsez).

As an alternative method of identifying SEZ firms, we use a location-based approach using workplace location data from employee contracts, as recorded in the Employee Income and Payroll Certificates (IRP5) datasets. Specifically, a firm is classified as location-SEZ if the workplace location of employees stated in the contract linked with a specific firm matches the offi-

cial SEZ location as compiled from various administrative sources. This identification approach enables us to detect firms benefiting from SEZ-related preferential tax reductions and incentives without formally registering as SEZ firms or being physically located within an SEZ. By capturing these firms, this approach represents a significant advancement in identifying firms that exploit these preferential tax incentives to avoid tax payments, despite not being entitled to such benefits, while also enhancing our understanding of the impact of SEZs in a developing country context.

Although the SEZ establishment Act was enacted in 2014, firms began self-reporting as SEZ firms from 2016 onward. However, many SEZs were initially established by transforming previously established IDZs, and as a result we are able to identify firms that are located in the SEZ's designated location back to as early as 2008, reflecting their origins in the IDZ framework. For instance, firms located in the East London SEZ traced back to as early as 2008, reflecting their origins in the IDZ framework as the East London IDZ was designated in 2002, became operational by 2008. Table 1 also shows that 4,107 firms have been identified as SEZ firms based on self-reporting, and 31,679 location-based SEZ firms were identified between 2017 and 2020.

Table 1: SEZ identification sample sizes before and after restrictions

SEZ identification	Before	After	Earliest year
SEZ self	39,025	4,600	2016
SEZ location	97,023	27,875	2008
Total	9,109,898	921,101	—

Source: South African Revenue Service and the National Treasury.

Furthermore, we have observed heterogeneity in the entry and exit of firms, as well as the duration of their stay within the SEZs. Some firms have never entered an SEZ based on each classification, while others have entered and enjoyed the benefits for a certain period. Some firms may have an indefinite stay, while others join for a temporary period. Additionally, some firms could be established outside of the SEZs, while others are established within them. Based on this diverse variation in the length of operation within SEZs and their establishment locations, we further classify our sample into five categories of firms. The firms are classified as follows: (i) firms that have never joined SEZs; (ii) firms established outside SEZs, identified by the year they were first observed in the sample and the year they are recognized as SEZ firms; (iii) firms established within SEZs and operating there throughout the sample period; (iv) firms established outside SEZs that have joined an SEZ and later exited to operate outside; and (v) firms created within SEZs that have left the zone to operate outside of it. This classification of firms regarding their entry and exit from SEZs allows us to identify those that join SEZs for the short-term benefits of operating within them.

Table 2 illustrates the distribution of SEZ status among our sample. As indicated by the table, there is significant variation in SEZ status across the different classifications. Almost 98% of firms operate outside SEZs based on the self-reported criteria for SEZ status, while approximately 95% of firms are identified as operating within SEZs according to their location. Among the firms identified as operating within SEZs, a substantial number consist of small, flip-flopping businesses. This suggests that these firms join for brief periods to take advantage of SEZ benefits before moving outside the SEZ.

Table 2: Distribution of SEZ firm types by size and identification method

SEZ status	Full sample		Large firms		Small firms	
	Self-reported	Location	Self-reported	Location	Self-reported	Location
Never	908,982	882,694	142,445	133,979	766,537	748,715
Join	3,697	4,231	289	999	3,408	3,232
Born in	732	30,536	42	7,449	690	23,087
Join–flip	4,530	74	341	15	4,189	59
Born–flip	3,160	3,566	321	996	2,839	2,570
Total	921,101	921,101	143,438	143,438	777,663	777,663

Source: South African Revenue Service and the National Treasury.

Table 3: Industry distribution by firm size and SEZ status

Industry (2-digit)	Full sample	Firm size		Self-reported SEZ		Location SEZ	
		Large	Small	Large	Small	Large	Small
Agriculture, forestry, fishing	51,381	43,279	8,102	51,228	153	21,315	986
Mining	7,192	5,458	1,734	7,149	43	4,354	192
Manufacturing	83,206	64,686	18,520	82,766	440	51,856	3,067
Construction	99,514	88,025	11,489	98,765	749	46,645	3,638
Transport, communication, energy	48,382	40,669	7,713	48,041	341	25,333	2,024
Retail and wholesale trade	187,640	153,128	34,512	186,866	774	99,696	6,362
Services	350,285	303,221	47,064	348,439	1,846	189,658	9,629
Finance, insurance, real estate	90,495	76,413	14,082	90,269	226	41,092	1,711
Public administration	730	683	47	718	12	335	2
Other	2,273	2,099	174	2,257	16	927	45
Total	921,098	777,661	143,437	916,498	4,600	481,211	27,675

Source: South African Revenue Service and the National Treasury.

The sectoral composition of our sample is dominated by retail and wholesale trade, as well as the services sectors. As shown in Table 3, this pattern is also evident within the SEZs, regardless of their identification, where the sectoral distribution of SEZ firms mirrors that of the overall sample. Although SEZs in South Africa can be either single-sector or multi-sector in nature, the data reveal a heterogeneous mix of industries across zones. In particular, unlike traditional

SEZs in countries such as China or India—where manufacturing tends to dominate—South Africa’s SEZs are primarily populated with service-oriented and wholesale-related firms. Manufacturing firms represent only 9% of the total sample, 8.3% of self-reported SEZ firms, and 13% of SEZs identified by the location of the contract with employees. These figures suggest that South African SEZs diverge from the conventional manufacturing-driven model seen in early SEZ establishments, reflecting a unique industrial composition within the country’s SEZ framework.

In South Africa, the government also provides preferential corporate tax treatment to qualifying Small Business Corporations (SBCs) to support the growth of small and medium-sized enterprises. This classification is based on specific criteria outlined in the Income Tax Act of 1962, which considers the firms’ annual sales turnover and taxable income, and the minimum threshold could vary across a tax year. Generally, registered firms are classified into three categories: SBCs, medium enterprises, and large companies. In this study, we classify SBC firms as small firms, while medium enterprises and large firms are referred to as large firms. This classification is based on the Income Tax Act 1962, which grants small firms preferential corporate tax rates ranging from 15% to 17%, whereas medium and large firms are subject to a corporate tax rate of at least 28% and higher. We classify a firm as small if its annual turnover is below ZAR750,000 and its taxable income is below ZAR550,000; otherwise, it is classified as a large firm.

Table 4: Descriptive statistics of firm-level variables

Variable	All firms		Large firms		Small firms	
	Mean	SD	Mean	SD	Mean	SD
ln(gross sales)	14.984	1.851	17.010	1.580	14.610	1.643
ln(net profits)	12.149	2.186	14.660	1.303	11.382	1.790
ln(exports)	14.263	2.614	14.854	2.587	13.792	2.538
ln(imports)	14.526	2.687	15.465	2.671	13.882	2.503
ln(inventory)	13.079	2.226	14.603	2.149	12.690	2.072
ln(ppe) ^a	12.045	3.444	13.650	2.828	11.728	3.467
ln(total assets)	14.140	2.247	16.398	1.589	13.724	2.098
ln(total wages)	14.988	1.633	15.324	1.568	14.689	1.633
ln(contracts) ^b	2.947	1.435	3.842	1.485	2.719	1.329
ln(productivity) ^c	12.536	1.260	13.274	1.241	12.348	1.195
Number of firms	921,101		143,438 (16%)		777,663 (84%)	

Note: ^aProperty, plants, and equipment. ^bThis is the number of contracts registered by the firm with the tax authorities. We will use this as a proxy for the number of workers. ^cProductivity is measured as gross sales per contract.

Source: South African Revenue Service and the National Treasury.

As shown in Table 4, the full sample comprises 921,101 firms, with small firms accounting for the vast majority at 84% and large firms making up 14% of the sample between 2017 and 2020. The average total sales across the sample is 14.98, with a standard deviation of 1.85 and an average net profit of 12.15. The results also show that, on average, firms have a balanced trade situation, slightly tending to be more import intensive, and firms tend to have, on average, three employee contracts across the sector. When comparing large and small classifications of firms, large firms generally outperform smaller firms across all financial and operational measures. For instance, larger firms have higher average gross sales of 17.01 and profits of 14.66 compared to small firms' sales of 14.61 and net profit of 11.38. Similarly, larger firms record higher log export and import values than small firms. Additionally, larger firms exhibit greater asset intensity and productivity levels, and create more employment opportunities than smaller firms, as they have a higher number of contracts than small firms.

4 Identification strategy

To examine the impact of SEZs on economic growth and firm behaviour, we employ a DiD estimation strategy. This method enables us to compare the characteristics and performance of firms that joined and operate within SEZs, relative to comparable firms that did not enter SEZs and operate outside. By doing so, we aim to assess how the establishment of SEZs influences firm dynamics and contributes to broader economic outcomes in South Africa.

Specifically, we examine how SEZs affect firm behaviour by comparing firms operating within SEZs to those situated outside. South Africa's SEZ policy framework provides a range of incentives aimed at attracting FDI, encouraging domestic entrepreneurship, generating employment, boosting exports, and promoting regional economic inclusivity. Our key analytical assumption is that firms entering SEZs are likely to display behavioural changes compared to firms that remain outside SEZs.

For the DiD approach to produce credible causal estimates, we rely on the conditional mean independence assumption, which asserts that, in the absence of treatment (joining an SEZ), the treated and control firms would have followed parallel trends over time. We also assume that the treatment (SEZ participation) is exogenous: SEZ classification, whether through self-declaration or based on employee contact location, is determined by government decision-makers, guided by geographic and strategic priorities, rather than firm-level decisions, and firms previously operating within IDZs are directly transferred to SEZs.

Importantly, many of the firms classified as SEZ participants in our sample were established prior to SEZ designation and the introduction of SEZ-specific benefits. This aspect strengthens the credibility of our identification strategy by diminishing concerns about selection bias. In addition to the baseline analysis, we further explore the behavioural changes of firms established

after the SEZ's inception, comparing those founded within SEZ areas to those founded outside to provide additional robustness and nuance to our findings.

The fixed effects DiD estimation equation is

$$Y_{it} = \alpha + \beta \text{SEZ}_{it}^{(S)} + \theta X_{it} + \lambda_t + \gamma_i + \varepsilon_{it}, \quad (1)$$

where Y_{it} refers to the dependent variable measuring the performance of firms, which includes the logarithm of gross sales, net profit, export and import volumes, investments in inventory, investment in ppe (property, plant, and equipment), total assets, total wages, total number of employment contracts, and productivity (defined as the ratio of gross sales to the number of contracts). $\text{SEZ}_{it}^{(S)}$ is a binary treatment variable equal to 1 if firm i is identified as operating in an SEZ under identification strategy S at time t , and 0 otherwise. X_{it} is a vector of time-varying control variables, including the lagged logs of the number of contracts, of gross sales, and of capital stock (ppe), and lagged profit margin (defined as the ratio of gross profit to gross sales). λ_t represents year fixed effects to control for macroeconomic trends and common time shocks. γ_i denotes firm fixed effects, which control for unobserved time-invariant heterogeneity at the firm level, and ε_{it} is the error term, clustered at the firm level to account for intra-firm correlation in treatment assignment.

In addition to the baseline specification, we have also split the sample into different categories of SEZ status, based on the nature of entry and exit of SEZs, as well as the formulation place of firms. Furthermore, we estimate separate regressions by firm size (small versus large firms) to capture heterogeneous treatment effects. We also include an interaction term between the treatment indicator $\text{SEZ}_{it}^{(S)}$ and a foreign ownership dummy to examine whether SEZ participation has differential impacts on foreign-owned versus domestically owned firms.

5 Results

5.1 Self-reported SEZ firms

In this section we present empirical evidence on how SEZs influence firms' behaviour and their potential impact on economic development. Our baseline estimates, presented in Panel A of Table 5, shows the result of self-reported SEZ firms without controlling for time-varying firm characteristics. The results indicate that firms operating within SEZs, on average, have higher net profits compared to firms operating outside SEZs, suggesting that SEZ participation is associated with higher profitability. Although the coefficients are statistically insignificant, the baseline results also reveal some surprising and potentially concerning patterns. Self-reported SEZ firms appear to have lower export volumes compared to non-SEZ firms—an outcome that contrasts with the traditional role of SEZs in promoting export-led growth, as observed in

countries like China and India. Furthermore, these firms also exhibit lower levels of total assets, wage bills, and employment contracts, hinting at a possible contraction in firm scale or labour demand (Abagna et al. 2025; Wang 2013; Lu et al. 2019). Similarly, see Schminke and Van Biesebroeck (2013).

Table 5: Regression SEZ self-reported full sample

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	0.0123 (0.012)	0.075*** (0.029)	−0.013 (0.115)	0.088 (0.117)	0.032 (0.025)	0.029 (0.031)	−0.002 (0.017)	−0.008 (0.036)	−0.002 (0.014)	0.011 (0.018)
Observations	870,535	529,329	47,296	60,932	360,140	748,955	870,535	176,895	469,109	469,109
R-squared	0.948	0.861	0.904	0.912	0.952	0.872	0.929	0.938	0.967	0.915
Panel B: With lagged controls subsample										
SEZ self-reported	−0.011 (0.017)	−0.025 (0.055)	−0.268** (0.106)	0.082 (0.169)	0.051 (0.037)	0.029 (0.056)	−0.010 (0.019)	0.032 (0.042)	−0.006 (0.013)	−0.011 (0.024)
ln(contracts) _{<i>t</i>−1}	0.111*** (0.004)	0.053*** (0.011)	0.108*** (0.031)	0.119*** (0.030)	0.065*** (0.008)	0.101*** (0.011)	0.073*** (0.005)	0.130*** (0.009)	0.205*** (0.005)	−0.037*** (0.007)
ln(gross sales) _{<i>t</i>−1}	0.077*** (0.006)	−0.008 (0.011)	0.145*** (0.036)	0.135*** (0.029)	0.096*** (0.008)	0.202*** (0.010)	0.114*** (0.004)	0.119*** (0.007)	0.062*** (0.003)	−0.170*** (0.008)
ln(ppe) _{<i>t</i>−1}	0.010*** (0.001)	−0.010*** (0.002)	0.005 (0.008)	−0.003 (0.005)	0.009*** (0.001)	0.088*** (0.005)	0.015*** (0.001)	0.015*** (0.002)	0.004*** (0.000)	0.004*** (0.001)
profit margin _{<i>t</i>−1}	−4.83e-6*** (0.000)	−0.019 (0.015)	0.000 (0.007)	0.004 (0.024)	−0.001*** (0.000)	−1.67e-6*** (0.000)	−9.17e-7*** (0.000)	−0.004*** (0.000)	−5.65e-7*** (0.000)	−6.93e-6*** (0.000)
Observations	357,818	204,582	27,153	34,214	171,478	347,140	357,818	97,978	239,874	239,874
R-squared	0.968	0.877	0.925	0.934	0.964	0.904	0.955	0.954	0.989	0.952

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Panel B of Table 5 presents the results after including firm-level time-varying controls of lagged performance indicators: the log of the firm's employment contracts, the log of gross sales, the log of ppe, and the profit margin. Once these are accounted for, the negative impacts become more pronounced. Self-reported SEZ firms show a statistically significant lower export performance relative to their non-SEZ counterparts. Although other performance metrics—such as total assets, employment, productivity, and sales—remain statistically insignificant, their coefficients continue to exhibit negative signs. These findings challenge the conventional expectation that SEZs serve as engines of productivity, employment, and export growth (Wang 2013; Lu et al. 2019). Instead, the evidence suggests that, at least in the South African context, SEZs may not be achieving their intended developmental objectives. Firms operating within SEZs do not appear to contribute more to overall economic activity than comparable firms outside these zones, and may, in some cases, perform worse.

Furthermore, across all specifications, our control variables—with the exception of the lag of profit margins—are positive and statistically significant. This indicates that historically larger firms operating within SEZs tend to demonstrate stronger current performance across key indicators such as gross sales, total assets, and net profit. Conversely, the lagged profit margin is negatively associated with firm outcomes and statistically significant, suggesting that firms with historically higher profit margins may face diminishing returns or reduced growth potential. These findings emphasize the importance of firm size and past performance in the shaping the behaviour of the firms operating within SEZs.

Tables 6 and 7 present the effects of SEZ participation on self-reported SEZ firms, disaggregated by firm size into large and small firms based on annual sales turnover and taxable income, respectively. Table 6 shows the results for large firms and reveals that, among large self-reported SEZ firms, only total wage expenditure is significantly higher compared to large firms operating outside SEZs. Panel B of Table 6, with estimation including the control variables, indicates that large self-reported SEZ firms have higher wage expenses compared to large firms operating outside SEZs.

Both Panels A and B of Table 6 consistently indicate that large self-reported firms located within SEZs do not significantly outperform their non-SEZ counterparts in terms of productivity, exports, investment, or employment. In fact, in most cases, the economic contributions of large SEZ firms are statistically insignificant but indicate a positive impact of SEZs. These findings point to a limited role of SEZs in enhancing the performance of large firms in South Africa. Despite receiving SEZ designation and related incentives, these firms do not appear to contribute meaningfully more to employment, output, or export growth compared to similar firms outside of SEZs.

Table 6: Regression SEZ self-reported and large firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	−0.030 (0.045)	−0.026 (0.047)	0.167 (0.292)	0.286 (0.182)	0.002 (0.052)	0.105 (0.111)	0.056 (0.044)	0.009 (0.051)	0.016 (0.031)	−0.074 (0.073)
Observations	121,636	119,130	20,235	23,867	68,000	110,341	121,636	78,461	82,285	82,285
R-squared	0.975	0.886	0.921	0.925	0.959	0.891	0.952	0.946	0.980	0.956
Panel B: With lagged controls subsample										
SEZ self-reported	0.003 (0.037)	−0.058 (0.057)	0.006 (0.182)	0.532 (0.328)	0.046 (0.077)	0.234 (0.246)	−0.038 (0.029)	0.074* (0.044)	−0.001 (0.029)	0.000 (0.049)
ln(contracts) _{<i>t</i>−1}	0.092*** (0.008)	0.056*** (0.013)	0.093** (0.045)	0.165*** (0.052)	0.076*** (0.016)	0.109*** (0.022)	0.073*** (0.008)	0.125*** (0.014)	0.197*** (0.013)	−0.074*** (0.014)
ln(gross sales) _{<i>t</i>−1}	0.104*** (0.012)	0.044*** (0.015)	0.159*** (0.059)	0.202*** (0.045)	0.087*** (0.021)	0.194*** (0.022)	0.108*** (0.009)	0.122*** (0.014)	0.079*** (0.008)	−0.114*** (0.016)
ln(ppe) _{<i>t</i>−1}	0.008*** (0.001)	0.001 (0.002)	0.000 (0.011)	−0.000 (0.008)	0.010*** (0.003)	0.006 (0.015)	0.011*** (0.002)	0.011*** (0.003)	0.006*** (0.001)	0.002 (0.002)
profit margin _{<i>t</i>−1}	−0.010 (0.017)	−0.049* (0.026)	0.023 (0.048)	−0.041** (0.017)	0.142* (0.080)	0.022 (0.033)	0.016 (0.018)	−0.039* (0.024)	−0.004 (0.010)	0.010 (0.017)
Observations	64,302	62,923	11,678	13,706	38,210	62,594	64,302	42,968	40,570	40,570
R-squared	0.984	0.907	0.939	0.941	0.968	0.916	0.965	0.959	0.991	0.974

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table 7: Regression SEZ self-reported and small firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	0.014 (0.012)	0.076** (0.030)	-0.102 (0.141)	-0.112 (0.147)	0.030 (0.027)	0.031 (0.033)	-0.004 (0.018)	-0.026 (0.052)	0.004 (0.015)	0.013 (0.019)
Observations	718,677	379,608	23,382	32,481	277,907	610,472	718,677	84,772	359,410	359,410
R-squared	0.930	0.771	0.894	0.896	0.945	0.868	0.910	0.938	0.960	0.900
Panel B: With lagged controls subsample										
SEZ self-reported	-0.009 (0.020)	-0.003 (0.060)	-0.341*** (0.129)	-0.072 (0.200)	0.043 (0.043)	0.040 (0.059)	-0.008 (0.022)	-0.003 (0.060)	0.003 (0.014)	-0.017 (0.027)
ln(contracts) _{t-1}	0.113*** (0.005)	0.044*** (0.013)	0.143*** (0.044)	0.064 (0.040)	0.059*** (0.009)	0.106*** (0.013)	0.073*** (0.006)	0.123*** (0.013)	0.204*** (0.005)	-0.034*** (0.007)
ln(gross sales) _{t-1}	0.061*** (0.006)	-0.080*** (0.014)	0.084* (0.046)	0.121*** (0.040)	0.092*** (0.009)	0.192*** (0.012)	0.106*** (0.005)	0.105*** (0.010)	0.059** (0.003)	-0.176*** (0.009)
ln(ppe) _{t-1}	0.009*** (0.001)	-0.013*** (0.003)	-0.002 (0.012)	-0.005 (0.006)	0.008*** (0.002)	0.099*** (0.006)	0.014*** (0.002)	0.014*** (0.003)	0.004*** (0.001)	0.003*** (0.001)
profit margin _{t-1}	-4.69e-6*** (5.25e-8)	0.004 (0.015)	-0.006 (0.008)	0.023 (0.033)	-0.001*** (0.000)	-1.59e-6*** (9.56e-8)	-8.50e-7*** (3.99e-8)	-0.005*** (0.000)	-5.42e-7*** (2.69e-8)	-6.89e-6*** (7.23e-8)
Observations	270,291	121,842	12,615	16,898	121,624	262,257	270,291	44,314	174,754	174,754
R-squared	0.956	0.778	0.911	0.923	0.958	0.899	0.941	0.954	0.986	0.941

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

The results for small self-reported firms are broadly consistent with the full-sample regression outcomes. Small firms operating within SEZs demonstrate significantly lower engagement in international trade, with the self-reported SEZ firms mainly exporting lower volume than comparable small firms outside SEZs. Although the direction of the SEZ impact aligns with the full-sample results, the magnitude of the estimated effects is generally larger among small firms. This is attributed to the disproportionately large share of small firms across both SEZ and non-SEZ areas, which could amplify the observed effects within this subgroup.

5.2 Employee contract location matched SEZ firms

We re-estimated Equation (1) using SEZ firms identified based on the locations of employee contracts, matched to the official boundaries of SEZs. Table 8 presents the baseline results for this group. As shown in Panel A of Table 8, firms located within officially designated SEZ locations demonstrate better performance outcomes than firms located outside SEZs. Specifically, SEZ-location firms exhibit higher gross sales, greater investment in inventory, higher total assets, larger wage bills, and improved productivity.

Even after accounting for firm-level characteristics, Panel B of Table 8, SEZ-location firms continue to indicate positive and statistically significant performance in higher gross sales, total assets, and employment contracts compared to firms located outside SEZs designated areas. Across both specifications—both with lagged controls and full sample—the results consistently highlight the positive impact of being located within an SEZ. However, these findings contradict those based on self-reported SEZ firms, which showed weaker or even lower performance effects. This contrast underscores the importance of the identification strategy: the choice between using location-based or self-reported SEZ status significantly affects the estimated outcomes.

Large firms located in SEZs designated areas tend to import more and invest more in property, plant, and equipment (ppe) compared to large firms in other locations. Consistent with the behavior of self-reported SEZ firms, the regression results in Panel (a) of Table 9, does not show statistically significant difference between large firms located in SEZs and those located elsewhere. In fact, for most outcomes, the estimates Full Sample show effects in the opposite direction compared to the self-reported SEZ firms, with the exception of net profits.

However, once control Variables are included, the results indicate that large firms in SEZ locations import more and invest more in ppe than large firms in non-SEZ areas. While most of these coefficient estimates remain statistically insignificant, the overall pattern is broadly consistent with the results for self-reported SEZ firms, suggesting a positive impact of being located and operating in SEZ areas.

Table 8: Regression SEZ location full sample

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ location	0.0835*** (0.016)	0.023 (0.039)	−0.008 (0.076)	−0.050 (0.076)	0.053** (0.024)	0.019 (0.040)	0.061*** (0.019)	0.061*** (0.023)	−0.005 (0.015)	0.087*** (0.018)
Observations	484,049	284,329	34,621	44,028	219,366	425,612	484,049	121,700	469,109	469,109
R-squared	0.959	0.875	0.917	0.923	0.961	0.897	0.947	0.946	0.967	0.915
Panel B: With lagged controls subsample										
SEZ location	0.091*** (0.029)	−0.037 (0.074)	0.004 (0.155)	0.160 (0.122)	0.014 (0.030)	0.069 (0.046)	0.068** (0.034)	0.022 (0.045)	0.050*** (0.019)	0.042 (0.030)
ln(contracts) _{<i>t</i>−1}	0.166*** (0.006)	0.076*** (0.015)	0.091** (0.045)	0.152*** (0.044)	0.075*** (0.010)	0.144*** (0.014)	0.093*** (0.007)	0.138*** (0.012)	0.205*** (0.005)	−0.037*** (0.007)
ln(gross sales) _{<i>t</i>−1}	−0.108*** (0.008)	−0.133*** (0.015)	0.048 (0.056)	0.037 (0.042)	0.061*** (0.010)	0.176*** (0.012)	0.051*** (0.005)	0.047*** (0.009)	0.062*** (0.003)	−0.170*** (0.008)
ln(ppe) _{<i>t</i>−1}	0.008*** (0.001)	−0.013*** (0.003)	0.003 (0.012)	−0.009 (0.007)	0.008*** (0.002)	−0.123*** (0.007)	−0.001 (0.002)	0.013*** (0.0023)	0.004*** (0.000)	0.004*** (0.001)
profit margin _{<i>t</i>−1}	−7.50e-6*** (6.32e-8)	−0.118*** (0.031)	−0.009 (0.052)	0.014 (0.031)	0.001 (0.001)	−1.38e-6*** (1.02e-7)	−2.53e-7*** (4.34e-8)	−0.001 (0.001)	−5.64e-7*** (2.38e-8)	−6.93e-6*** (6.37e-8)
Observations	240,258	125,344	17,858	22,586	115,448	234,252	240,258	63,742	239,874	239,874
R-squared	0.979	0.911	0.943	0.950	0.976	0.937	0.969	0.969	0.989	0.952

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table 9: Regression SEZ location and large firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ location	0.033 (0.025)	-0.029 (0.039)	-0.058 (0.106)	-0.027 (0.124)	-0.004 (0.043)	-0.001 (0.055)	-0.026 (0.030)	0.058 (0.037)	0.011 (0.030)	0.022 (0.032)
Observations	84,724	82,996	15,366	18,075	48,939	76,544	84,724	55,585	82,285	82,285
R-squared	0.980	0.905	0.932	0.936	0.965	0.910	0.961	0.953	0.980	0.956
Panel B: With lagged controls subsample										
SEZ location	0.020 (0.023)	-0.034 (0.077)	0.097 (0.136)	0.360* (0.214)	-0.040 (0.055)	0.164** (0.080)	0.017 (0.029)	-0.023 (0.068)	0.026 (0.034)	-0.006 (0.039)
ln(contracts) _{<i>t</i>-1}	0.123*** (0.010)	0.074*** (0.018)	0.124* (0.065)	0.153* (0.079)	0.109*** (0.022)	0.148*** (0.031)	0.078*** (0.011)	0.134*** (0.020)	0.197*** (0.013)	-0.074*** (0.014)
ln(gross sales) _{<i>t</i>-1}	-0.036** (0.015)	-0.053** (0.021)	-0.007 (0.086)	0.096* (0.056)	0.039 (0.028)	0.193*** (0.028)	0.061*** (0.012)	0.048*** (0.018)	0.079*** (0.008)	-0.114*** (0.016)
ln(ppe) _{<i>t</i>-1}	0.008*** (0.002)	-0.001 (0.003)	0.006 (0.017)	-0.006 (0.011)	0.009** (0.004)	-0.151*** (0.021)	0.008*** (0.002)	0.010*** (0.003)	0.006*** (0.002)	0.002 (0.002)
profit margin _{<i>t</i>-1}	0.007 (0.009)	-0.055 (0.039)	0.057 (0.052)	-0.039*** (0.015)	0.079 (0.112)	-0.013 (0.021)	0.002 (0.009)	-0.059* (0.034)	-0.004 (0.010)	0.010 (0.017)
Observations	40,640	39,702	7,682	8,996	24,564	39,796	40,640	27,260	40,570	40,570
R-squared	0.990	0.934	0.953	0.954	0.977	0.944	0.971	0.971	0.991	0.974

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

The regression results for small firms located in SEZ areas suggest that proximity to SEZs is associated with enhanced firm performance. As illustrated in Panels A and B of Table 10, small SEZ-location firms consistently outperform their counterparts outside SEZs across several key performance indicators. In Panel A), small SEZ-location firms demonstrate significantly higher total sales, total assets, wages, and productivity. Specifically, the SEZ location variable exhibits positive and statistically significant coefficients for gross sales, assets, wage bills, and productivity, indicating an initial performance advantage for small firms located in SEZs.

The performance of the small SEZ location remains consistent, even when controlling for firm-specific characteristics; SEZ continues contributing in enhancing the performance of small firms. Panel B) indicates that small SEZ-location firms have significantly higher sales, assets, and employment contracts compared to their counterparts in non-SEZ locations. Furthermore, small SEZ-location firms also have higher productivity compared to firms located outside SEZs. Surprisingly, although the coefficients for exports and imports are statistically insignificant, the coefficient estimates for exports and imports exhibit a downward slope, similar to the findings of small self-reported SEZ firms, suggesting that SEZs may not be the strong export hubs for small firms.

5.3 Self-reported and employee contract location matched SEZ firms

Table 11 shows the results for self-reported and location-based SEZ firms located within officially designated SEZ areas. The findings reveal that firms that are self-reported and situated in the right location import significantly less than firms that do not declare as SEZs and are located in non-SEZ designated areas. The baseline estimations in Panel A indicate that self-reported SEZ status alone—regardless of actual SEZ location—does not significantly influence firm behaviour. However, being located in an SEZ—regardless of the self-reported status—significantly affects firm behaviour and positively impacts their performance. Specifically, for firms that both self-report and are located in SEZs, location appears to influence key performance metrics such as gross sales, inventory levels, total assets, wage bills, and productivity. The baseline estimates also suggest that self-reported firms in the correct areas export more than firms operating outside SEZs or away from them. Meanwhile, Panel B (with lagged controls) indicates that self-reported SEZ status is linked to higher import levels, while being in the right locations contributes to increased sales, assets, and employee contracts. The results further show that self-reported SEZ firms in the correct locations display mixed signals, though the coefficient estimates for the performance indicators are statistically insignificant. This suggests that physical location within officially designated SEZs plays a more significant role in shaping firm behaviour than self-reported SEZ status alone. Overall, the results indicate that firms situated in designated SEZs could enjoy the benefits associated with SEZs even without declaring on the Corporate Income Tax form.

Table 10: Regression SEZ location and small firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ location	0.117*** (0.022)	0.048 (0.062)	0.106 (0.133)	−0.060 (0.114)	0.063* (0.034)	0.022 (0.055)	0.097*** (0.025)	0.056* (0.033)	−0.016 (0.018)	0.129*** (0.023)
Observations	371,109	175,740	15,979	21,752	156,952	323,054	371,109	53,927	359,410	359,410
R-squared	0.943	0.777	0.905	0.906	0.955	0.893	0.931	0.944	0.960	0.900
Panel B: With lagged controls subsample										
SEZ location	0.125*** (0.040)	−0.019 (0.122)	−0.103 (0.359)	−0.016 (0.164)	0.013 (0.041)	0.039 (0.060)	0.104** (0.050)	0.051 (0.078)	0.053** (0.025)	0.074* (0.039)
ln(contracts) _{<i>t</i>−1}	0.168*** (0.007)	0.054** (0.021)	0.122* (0.065)	0.075 (0.055)	0.070*** (0.012)	0.152*** (0.017)	0.095*** (0.007)	0.135*** (0.018)	0.204*** (0.005)	−0.034*** (0.008)
ln(gross sales) _{<i>t</i>−1}	−0.117*** (0.009)	−0.147*** (0.021)	0.044 (0.076)	0.076 (0.061)	0.058*** (0.011)	0.170*** (0.015)	0.049*** (0.006)	0.040*** (0.011)	0.059*** (0.003)	−0.177*** (0.009)
ln(ppe) _{<i>t</i>−1}	0.007*** (0.001)	−0.018*** (0.004)	−0.012 (0.019)	−0.012 (0.009)	0.006*** (0.002)	−0.119*** (0.007)	−0.004 (0.003)	0.013*** (0.004)	0.004*** (0.001)	0.003*** (0.001)
profit margin _{<i>t</i>−1}	−7.43e-6*** (7.24e-8)	−0.120*** (0.039)	−0.018 (0.060)	0.061 (0.056)	0.001 (0.001)	−1.35e-6*** (1.20e-7)	−2.43e-7*** (5.05e-8)	−8.86e-5 (0.001)	−5.41e-7*** (2.69e-8)	−6.88e-6*** (7.22e-8)
Observations	175,022	69,216	7,700	10,346	78,848	170,464	175,022	26,490	174,754	174,754
R-squared	0.970	0.823	0.928	0.937	0.972	0.932	0.959	0.967	0.986	0.941

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table 11: Effect of SEZ status on firm performance

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	0.007 (0.016)	0.045 (0.049)	−0.081 (0.124)	0.092 (0.159)	0.013 (0.038)	0.058 (0.049)	0.017 (0.023)	−0.004 (0.044)	−0.005 (0.014)	0.011 (0.018)
SEZ location	0.083*** (0.016)	0.023 (0.039)	−0.010 (0.076)	−0.052 (0.076)	0.053** (0.024)	0.020 (0.040)	0.061*** (0.019)	0.061*** (0.023)	−0.005 (0.015)	0.087*** (0.018)
SEZ self-reported × SEZ location	0.030 (0.058)	0.145 (0.142)	0.909* (0.522)	0.265 (0.349)	0.002 (0.151)	−0.120 (0.113)	0.042 (0.060)	0.047 (0.093)	0.141 (0.127)	0.001 (0.140)
Observations	484,049	284,329	34,621	44,028	219,366	425,612	484,049	121,700	469,109	469,109
R-squared	0.959	0.875	0.917	0.923	0.961	0.897	0.947	0.946	0.967	0.915
Panel B: With lagged controls subsample										
SEZ self-reported	−0.016 (0.022)	0.017 (0.068)	−0.241 (0.147)	0.527*** (0.178)	0.065 (0.053)	−0.036 (0.069)	−0.003 (0.023)	0.071 (0.054)	−0.001 (0.013)	−0.015 (0.024)
SEZ location	0.091*** (0.029)	−0.040 (0.074)	0.001 (0.155)	0.160 (0.122)	0.012 (0.030)	0.069 (0.046)	0.068** (0.034)	0.021 (0.045)	0.051*** (0.019)	0.042 (0.030)
SEZ self-reported × SEZ location	−0.041 (0.123)	0.569 (0.742)	0.110 (0.299)	−1.306*** (0.226)	0.583 (0.475)	−0.228 (0.301)	−0.086 (0.103)	0.172 (0.132)	−0.350 (0.219)	0.269 (0.235)
ln(contracts) _{<i>t</i>−1}	0.166*** (0.006)	0.076*** (0.015)	0.091** (0.045)	0.152*** (0.044)	0.075*** (0.010)	0.144*** (0.014)	0.093*** (0.006)	0.138*** (0.012)	0.205*** (0.005)	−0.037*** (0.007)
ln(gross sales) _{<i>t</i>−1}	−0.108*** (0.008)	−0.133*** (0.015)	0.048 (0.056)	0.037 (0.042)	0.061*** (0.010)	0.176*** (0.012)	0.051*** (0.005)	0.047*** (0.009)	0.062*** (0.003)	−0.170*** (0.008)
ln(ppe) _{<i>t</i>−1}	0.008*** (0.001)	−0.013*** (0.003)	0.003 (0.012)	−0.009 (0.007)	0.008*** (0.002)	−0.123*** (0.007)	−0.001 (0.003)	0.013*** (0.002)	0.004*** (0.000)	0.004*** (0.001)
profit margin _{<i>t</i>−1}	−7.50e-6*** (6.32e-8)	−0.118*** (0.031)	−0.009 (0.052)	0.014 (0.031)	0.001 (0.001)	−1.38e-6*** (1.02e-7)	−2.53e-7*** (4.34e-8)	−0.001 (0.001)	−5.64e-7*** (2.38e-8)	−6.93e-6*** (6.37e-8)
Observations	240,258	125,344	17,858	22,586	115,448	234,252	240,258	63,742	239,874	239,874
R-squared	0.979	0.911	0.943	0.950	0.976	0.937	0.969	0.969	0.989	0.952

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

The analysis for both large and small firms self-reported and located within officially designated SEZ areas reveals consistent results: self-reporting alone does not significantly influence firm behaviour, whereas being situated within a designated SEZ positively impacts firm performance. Table A1 presents the result for large firms that are self-reported and situated in SEZs. These results indicate that large self-reported SEZ firms located in the SEZs demonstrate mixed effects. Specifically, these firms report lower gross sales, net profits, imports, and wage bills, while showing higher investment in inventory and ppe. On the other hand, Table A2 highlights that small self-reporting SEZ firms located in the relevant SEZ areas experience stronger positive outcomes. These firms appear to benefit most from the SEZ incentive structure, with SEZ designation significantly enhancing their performance, suggesting that SEZs are particularly effective in supporting the growth and development of small enterprises.

Overall, regardless of the method used to identify SEZ-affiliated firms, their performance in international trade tends to lag behind that of firms operating outside SEZs. However, despite their limited impact on export performance, SEZs significantly enhance domestic economic outcomes by increasing investment, creating job opportunities, and improving productivity. We have also found that self-reported SEZ identifications correspond with an insignificant role of SEZs, whereas location-based identifications relate to a positive and significant influence of SEZs and firms are benefiting from the SEZ-related benefits without officially declaring their status. On the other hand, small firms identified as SEZs are the primary beneficiaries of SEZ incentives and demonstrate a disproportionately positive impact compared to large SEZ firms.

5.4 Heterogeneity in firm ownership

SEZs are designed to attract both foreign and domestic investment. A substantial body of literature has documented significant differences between foreign-owned and domestically owned firms. As shown, foreign-owned firms account for approximately 12% of firms located in SEZ-designated areas and less than 1% of self-reported SEZ-affiliated firms. In this section, we assess how variation in firm ownership influences the behaviour of firms based on the SEZ firms' identification approach.

5.4.1 Foreign vs. domestic SEZ-location firms

Table 12 presents regression estimates that explore variations by ownership. In general, firms located in SEZ-designated areas experience positive performance effects, while the performance of foreign-owned firms does not differ from that of domestic firms. As shown by the table, although it is statistically insignificant, the performance of foreign firms is generally higher than the performance of domestic firms. However, within SEZ-designated locations, foreign-owned firms tend to underperform relative to domestically owned firms operating in the same areas. Specifically, foreign-owned firms located in SEZ-designated areas have lower sales and

productivity compared to domestic firms within the same area. Although the coefficients are statistically insignificant, the interaction of SEZ location and foreign ownership indicates that foreign firms achieve positive performance in net profits, import and export activities, wage bills, and employment. These results imply that domestic firms are better positioned to leverage the incentives and benefits of SEZs by being located in SEZ-designated areas than foreign-owned firms.

Consistent with the previous findings, there are no substantial performance differences between large and small foreign and domestically owned firms. However, we observe some variation in the export behaviour of small foreign-owned firms (see Panel B of Table 13). Specifically, small foreign-owned firms tend to be less engaged in exports and import less than their small domestic counterparts. Although the coefficients are not statistically significant, large foreign-owned firms tend to underperform relative to large domestic firms across most performance indicators. In contrast, small foreign-owned firms generally outperform small domestic firms in several dimensions.

On the other hand, for large foreign firms located in SEZ-designated locations we only observe a significant variation in the wage bills, showing foreign firms tend to have high wage bills compared to domestic firms within SEZ locations. However, this higher wage bill is not accompanied by a larger number of contract employees, indicating that the difference may stem from higher wage rates rather than employment size. Additionally, small foreign-owned firms are less export-oriented than small domestic firms (see column 3, Panel B, Table 13). Moreover, small firms located in SEZ-designated areas tend to have lower sales and productivity but report higher net profits and employ more contract workers compared to domestic firms. These findings suggest stronger effects of ownership and firm size in SEZ performance outcomes.

Table 12: Effect of SEZ status on firm performance

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ location	0.086*** (0.016)	0.031 (0.039)	−0.018 (0.080)	−0.070 (0.083)	0.053** (0.025)	0.022 (0.040)	0.065*** (0.019)	0.063*** (0.023)	−0.007 (0.015)	0.092*** (0.018)
FDI	0.042** (0.021)	0.070 (0.049)	−0.043 (0.068)	0.066 (0.057)	0.0270 (0.033)	0.071 (0.043)	0.062** (0.025)	−0.022 (0.026)	−0.017 (0.014)	0.059*** (0.021)
SEZ location × FDI	−0.075** (0.031)	−0.172* (0.093)	0.050 (0.124)	0.100 (0.125)	−0.002 (0.049)	−0.060 (0.111)	−0.118 (0.094)	−0.019 (0.050)	0.043 (0.059)	−0.116* (0.060)
Observations	484,049	284,329	34,621	44,028	219,366	425,612	484,049	121,700	469,109	469,109
R-squared	0.959	0.875	0.917	0.923	0.961	0.897	0.947	0.946	0.967	0.915
Panel B: With lagged controls										
SEZ location	0.095*** (0.030)	−0.052 (0.075)	−0.036 (0.161)	0.157 (0.115)	0.015 (0.031)	0.071 (0.047)	0.070** (0.034)	0.017 (0.046)	0.048** (0.019)	0.048 (0.030)
FDI	0.037 (0.026)	−0.010 (0.080)	0.011 (0.110)	0.120 (0.124)	0.055 (0.047)	0.053 (0.055)	0.042 (0.036)	−0.013 (0.040)	0.017 (0.015)	0.021 (0.026)
SEZ location × FDI	−0.090* (0.052)	0.257 (0.157)	0.221 (0.221)	0.016 (0.207)	−0.019 (0.064)	−0.068 (0.127)	−0.050 (0.058)	0.049 (0.079)	0.049 (0.036)	−0.140** (0.055)
ln(contracts) _{t−1}	0.166*** (0.006)	0.076*** (0.015)	0.091** (0.045)	0.151*** (0.044)	0.075*** (0.010)	0.144*** (0.014)	0.093*** (0.006)	0.138*** (0.012)	0.205*** (0.005)	−0.037*** (0.007)
ln(gross sales) _{t−1}	−0.108*** (0.008)	−0.133*** (0.015)	0.048 (0.056)	0.037 (0.042)	0.061*** (0.010)	0.176*** (0.012)	0.051*** (0.005)	0.047*** (0.009)	0.062*** (0.003)	−0.170*** (0.008)
ln(ppe) _{t−1}	0.008*** (0.001)	−0.013*** (0.003)	0.003 (0.012)	−0.009 (0.007)	0.008*** (0.002)	−0.123*** (0.007)	−0.001 (0.002)	0.013*** (0.002)	0.004*** (0.000)	0.004*** (0.001)
profit margin _{t−1}	−7.50e-6*** (6.32e-8)	−0.118*** (0.031)	−0.008 (0.052)	0.015 (0.032)	0.001 (0.001)	−1.38e-6*** (1.02e-7)	−2.53e-7*** (4.34e-8)	−0.001 (0.001)	−5.64e-7*** (2.38e-8)	−6.93e-6*** (6.37e-8)
Observations	240,258	125,344	17,858	22,586	115,448	234,252	240,258	63,742	239,874	239,874
R-squared	0.979	0.911	0.943	0.950	0.976	0.937	0.969	0.969	0.989	0.952

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table 13: Effect of SEZ status on firm performance

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Large firms										
SEZ location	0.019 (0.024)	−0.044 (0.079)	0.117 (0.149)	0.349* (0.182)	−0.034 (0.057)	0.171** (0.081)	0.017 (0.029)	−0.037 (0.072)	0.026 (0.035)	−0.007 (0.041)
FDI	−0.008 (0.022)	−0.038 (0.092)	0.208 (0.162)	0.152 (0.170)	0.098 (0.081)	−0.011 (0.072)	0.052 (0.070)	−0.024 (0.046)	−0.016 (0.026)	0.009 (0.029)
SEZ location × FDI	0.011 (0.043)	0.127 (0.114)	−0.102 (0.246)	0.055 (0.323)	−0.051 (0.098)	−0.083 (0.148)	−0.001 (0.075)	0.124* (0.072)	−0.007 (0.027)	0.018 (0.048)
Observations	40,640	39,702	7,682	8,996	24,564	39,796	40,640	27,260	40,570	40,570
R-squared	0.990	0.934	0.953	0.954	0.977	0.944	0.971	0.971	0.991	0.974
Panel B: Small firms										
SEZ location	0.127*** (0.041)	−0.022 (0.123)	−0.162 (0.353)	0.004 (0.168)	0.011 (0.041)	0.038 (0.060)	0.104** (0.050)	0.043 (0.079)	0.051** (0.025)	0.078** (0.039)
FDI	0.048 (0.045)	0.129 (0.183)	−0.305* (0.176)	−0.129 (0.205)	0.049 (0.071)	0.033 (0.088)	0.012 (0.047)	0.023 (0.066)	0.025 (0.020)	0.023 (0.045)
SEZ location × FDI	−0.221*** (0.081)	0.343*** (0.113)	0.580 (1.118)	−0.227 (0.428)	0.153 (0.096)	0.224 (0.292)	0.005 (0.094)	0.204 (0.146)	0.222** (0.106)	−0.445*** (0.147)
Observations	175,022	69,216	7,700	10,346	78,848	170,464	175,022	26,490	174,754	174,754
R-squared	0.970	0.823	0.928	0.937	0.972	0.932	0.959	0.967	0.986	0.941

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Treated firms are identified either through self-reported SEZ status or by matching employee workplace locations with SEZ-designated areas. All regressions control for time-varying firm-level covariates, including lagged log employment contracts, gross sales, capital investment in ppe, and profit margin. Standard errors are clustered at the firm level.

Source: South African Revenue Service and the National Treasury.

5.5 Robustness

Given the variation in entry, exit, and locational dynamics of SEZ-affiliated firms, we conduct a comparative analysis for firms that have never been associated with SEZs and those identified as SEZ firms at different points in time—whether initially established inside or outside SEZ-designated areas. This approach enables us to identify firms that may have temporarily joined SEZs to capitalize on associated benefits. To this end, we re-estimate Equation (1), restricting the sample to the distinct firm groups outlined in Table 2. In the following sections we present the findings for each group separately and discuss how firm behaviour changes when operating within SEZs.

5.5.1 Never vs. Joiners-born-out self-reported

We compare firms that have never self-reported as SEZs during the analysis period (never) with firms that were operating before the introduction of SEZ-related incentives and subsequently began operating within SEZs (joiners). Accordingly, we restrict the sample to include only self-reported ‘never’ and ‘joiner’ firms. Tables 14 and 15 present the main findings based on this restricted sample, estimated using Equation (1). Table 14 shows that self-reported joiner firms that entered and remained in SEZs tend to export less than never joiners. They also incur higher wage bills and exhibit lower productivity levels than firms that have not participated in SEZs. Although statistically insignificant, these joiner firms also tend to demonstrate lower gross sales, net profit, and higher capital investment.

We also observed generally consistent patterns when comparing large and small firms within the never and joiner self-reported groups. As shown in Panel A of Table 15, large self-reported joiners report significantly higher import level and wage bills compared to large never SEZ firms. In contrast, Panel B shows that small self-reported joiner firms display significantly lower productivity than their non-SEZ counterparts. In general, self-reported SEZ joiners—both large and small—tend to have lower engagement in export markets, higher investment and wage bills, and lower productivity compared to firms that have never participated in SEZs. This result undervalues the role of SEZs in promoting economic growth and fostering employment creation and productivity among firms operating within SEZs.

Table 14: Never vs. joiners self-reported full sample

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
SEZ self-reported	−0.031 (0.034)	−0.059 (0.111)	−0.246* (0.131)	0.232 (0.412)	0.085 (0.060)	0.093 (0.098)	0.027 (0.038)	0.162* (0.086)	−0.004 (0.030)	−0.122** (0.058)
ln(contracts) _{t−1}	0.111*** (0.004)	0.053*** (0.011)	0.108*** (0.031)	0.118*** (0.030)	0.064*** (0.007)	0.101*** (0.011)	0.072*** (0.005)	0.129*** (0.009)	0.204*** (0.005)	−0.036*** (0.007)
ln(gross sales) _{t−1}	0.078*** (0.006)	−0.009 (0.011)	0.145*** (0.037)	0.135*** (0.029)	0.095*** (0.008)	0.201*** (0.010)	0.114*** (0.004)	0.119*** (0.007)	0.062*** (0.003)	−0.170*** (0.008)
ln(ppe) _{t−1}	0.010*** (0.0013)	−0.010*** (0.002)	0.005 (0.008)	−0.003 (0.005)	0.009*** (0.001)	0.088*** (0.005)	0.015*** (0.001)	0.015*** (0.002)	0.004*** (0.000)	0.004*** (0.001)
profit margin _{t−1}	−4.83e-6*** (4.72e-8)	−0.019 (0.015)	0.001 (0.007)	0.003 (0.024)	−0.001*** (0.000)	−1.66e-6*** (8.28e-8)	−9.16e-7*** (3.47e-8)	−0.004*** (0.000)	−5.65e-7*** (2.39e-8)	−6.93e-6*** (6.39e-8)
Constant	14.000*** (0.086)	12.990*** (0.165)	11.570*** (0.618)	12.270*** (0.484)	11.640*** (0.123)	7.750*** (0.153)	12.670*** (0.064)	12.420*** (0.130)	1.403*** (0.044)	15.330*** (0.115)
Observations	355,249	203,116	27,053	34,091	170,434	344,646	355,249	97,541	238,240	238,240
R-squared	0.968	0.878	0.925	0.934	0.964	0.904	0.955	0.954	0.989	0.952

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table 15: Never vs. joiners self-reported; large and small

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Large firms										
SEZ self-reported	−0.024 (0.061)	−0.037 (0.102)	−0.018 (0.211)	0.812* (0.426)	0.170 (0.116)	0.682 (0.443)	0.048 (0.042)	0.248*** (0.060)	0.048 (0.058)	−0.080 (0.080)
Observations	64,028	62,650	11,665	13,684	38,096	62,328	64,028	42,845	40,414	40,414
R-squared	0.984	0.907	0.939	0.941	0.968	0.917	0.965	0.959	0.991	0.975
Panel A: Small firms										
SEZ self-reported	−0.021 (0.038)	−0.111 (0.112)	−0.273 (0.169)	−0.375 (0.682)	0.067 (0.072)	0.056 (0.103)	0.036 (0.045)	−0.019 (0.106)	0.027 (0.030)	−0.144** (0.068)
Observations	268,148	120,787	12,534	16,808	120,751	260,171	268,148	44,052	173,430	173,430
R-squared	0.956	0.778	0.911	0.923	0.959	0.899	0.941	0.954	0.986	0.941

Standard errors in parentheses and are clustered at firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Treated firms are identified either through self-reported SEZ status or by location within an SEZ. All regressions include time-varying covariates reflecting firms' historical performance, including the log of lagged employment contracts, gross sales, capital investment in ppe, and profit margins.

Source: South African Revenue Service and the National Treasury.

5.5.2 Never vs. joiners-born-out SEZ location

We re-estimated for the same groups of firms—those that have never been located in SEZ-designated areas versus those identified as ‘joiners’ based on the workplace location of their employees matched to official SEZs. Specifically, we compare firms that have never operated in SEZ locations with those born within SEZ-designated areas and remaining there. The performance of location-based joiners is broadly consistent with that of joiners identified through self-reported SEZ status. As shown in Table 16, location-identified SEZ joiners demonstrate higher capital investment and wage bills, but lower productivity, compared with firms that have never been located in SEZs. Additionally, these firms tend to report higher gross sales and employ more workers than their non-SEZ counterparts.

Similarly, both small and large SEZ-location joiner firms have higher employment contracts. However, there are notable behavioural differences between small and large firms. As presented in Panels A and B of Table 17, large SEZ-location joiner firms tend to have higher capital investment in ppe. On the other hand, small SEZ-location joiner firms exhibit higher gross sales, total assets, wage bills, and employee contracts. Despite these differences, although the coefficients are statistically insignificant, both small and large SEZ-location joiner firms consistently show lower productivity, with small firms particularly exhibiting weaker involvement in international trade.

These findings for both self-reported and location SEZ operating firms indicate that the benefits of SEZ participation do not automatically enhance a firm’s performance or generate a greater economic impact, particularly in increasing exports and boosting productivity. Either the benefits of SEZs are inadequate and ineffective in improving firm performance, or the costs of operating within SEZs are substantially higher compared to operating outside them.

5.5.3 Never vs. joiners-born-in SEZs self-reported and location

For this group of firms, we do not observe significant differences between never-SEZ firms and joiner-born-in firms that remained in SEZs, regardless of whether identification is based on self-reported SEZ status or employee location. This provides further evidence of the ineffectiveness of South African SEZs in enhancing the performance of firms operating within SEZs. Specifically, SEZs in South Africa appear to fall short of expectations in serving as channels for productivity gains and improved export performance.

Table 16: Never vs. joiners SEZs location full sample

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
SEZ location	0.101*** (0.036)	-0.051 (0.124)	0.164 (0.293)	-0.108 (0.172)	-0.019 (0.060)	0.161** (0.074)	0.066* (0.039)	0.109* (0.064)	0.175*** (0.037)	-0.070** (0.030)
ln(contracts)	0.174*** (0.006)	0.085*** (0.016)	0.080* (0.048)	0.166*** (0.047)	0.080*** (0.010)	0.150*** (0.015)	0.094*** (0.006)	0.146*** (0.014)	0.205*** (0.005)	-0.031*** (0.007)
ln(gross sales) _{t-1}	-0.112*** (0.008)	-0.137*** (0.016)	0.061 (0.056)	0.037 (0.042)	0.058*** (0.010)	0.176*** (0.013)	0.0516*** (0.005)	0.047*** (0.009)	0.062*** (0.003)	-0.174*** (0.008)
ln(ppe) _{t-1}	0.008*** (0.001)	-0.013*** (0.003)	-0.002 (0.012)	-0.009 (0.007)	0.008*** (0.002)	-0.123*** (0.007)	-0.000 (0.002)	0.012*** (0.002)	0.004*** (0.000)	0.004*** (0.001)
profit margin _{t-1}	-7.46e-6*** (6.34e-8)	-0.116*** (0.031)	-0.008 (0.053)	0.008 (0.030)	0.001 (0.001)	-1.38e-6*** (1.04e-7)	-2.54e-7*** (4.38e-8)	-0.001 (0.001)	-5.60e-7*** (2.33e-8)	-6.90e-6*** (6.38e-8)
Constant	16.750*** (0.114)	15.080*** (0.244)	13.350*** (0.941)	13.960*** (0.706)	12.160*** (0.159)	10.560*** (0.191)	13.720*** (0.082)	13.610*** (0.148)	1.396*** (0.042)	15.350*** (0.114)
Observations	234,020	121,796	16,786	21,404	111,706	228,174	234,020	60,670	234,008	234,008
R-squared	0.978	0.909	0.942	0.948	0.975	0.936	0.969	0.967	0.989	0.951

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table 17: Never vs. joiners SEZs location; large and small firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Large firms										
SEZ location	0.040 (0.030)	−0.195 (0.127)	0.256 (0.271)	0.026 (0.235)	−0.088 (0.100)	0.268** (0.107)	0.086 (0.055)	0.069 (0.044)	0.108*** (0.041)	−0.067 (0.047)
Observations	38,944	38,058	7,140	8,408	23,350	38,122	38,944	25,830	38,940	38,940
R-squared	0.989	0.929	0.951	0.953	0.976	0.942	0.968	0.968	0.991	0.974
Panel A: Small firms										
SEZ location	0.156*** (0.056)	0.182 (0.230)	−0.255 (1.058)	−0.098 (0.134)	0.003 (0.085)	0.103 (0.107)	0.0996** (0.0500)	0.284* (0.173)	0.202*** (0.059)	−0.040 (0.040)
Observations	171,290	67,820	7,322	9,932	76,784	166,840	171,290	25,332	171,282	171,282
R-squared	0.969	0.821	0.929	0.934	0.971	0.932	0.959	0.965	0.986	0.940

Note: Standard errors in parentheses and are clustered at firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Treated firms are identified either through self-reported SEZ status or by location within an SEZ. All regressions include time-varying covariates reflecting firms' historical performance, including the log of lagged employment contracts, gross sales, capital investment in ppe, and profit margins.

Source: South African Revenue Service and the National Treasury.

5.5.4 Never vs. flip-flopper (joiners-born-out and quitters) SEZs

We further restricted our sample to compare firms that have never operated in SEZs with flip-flopping firms—those that enter and then exit SEZs. These flip-flopping firms may be considered as opportunistic, potentially joining SEZs to gain short-term benefits or to operate during economic booms and then exit during downturns. However, the results shown in Table 18 do not provide significant evidence that firms strategically enter SEZs to exploit SEZ-related advantages or economic booms. As illustrated in Panel A, self-reported flip-floppers have notably lower export performance, while location-identified flip-floppers exhibit lower inventory investment compared to never-SEZ firms.

In particular, the results indicate that flip-flopping firms have significantly lower export volumes and capital investments compared to non-SEZ firms. Additionally, the coefficient for net profit of flip-flopping firms is statistically insignificant. Interestingly, the signs of the coefficients are negative, suggesting that flip-flopping firms tend to perform worse than firms that have never entered SEZs, which implies that profit-based incentives are not a primary driver of SEZ entry and exit behaviour.

Although most coefficients are statistically insignificant, the overall pattern indicates that flip-flopping firms tend to underperform compared to firms that operate outside SEZs. Both self-reported and location-based flip-floppers have lower wage bills, fewer employee contracts, and slightly higher productivity than never-SEZ firms. These findings suggest that firms are not primarily driven by profit or monetary incentives when choosing to enter SEZs. Instead, their participation may be motivated by non-monetary benefits linked to SEZs, such as better access to infrastructure, resources, or government services, which enable the firms to cut costs and improve productivity.

As shown in Table 19, both large and small self-reported flip-flopping firms tend to underperform compared to firms that have never been in SEZs. Panel A for large self-reported flip-flopping firms has significantly lower assets, and the signs of the coefficients also indicate lower capital investment, wage bills, and employment contracts, while showing slightly higher productivity than large non-SEZ firms. In contrast, Panel B shows that small self-reported flip-flopping firms have significantly lower export volumes. Although statistically insignificant, the signs of the coefficients suggest these firms may experience higher capital investment, more employee contracts, and greater productivity, but at the expense of lower wage bills and asset holdings.

Table 18: Never vs. joiners-born-out and quitter full sample

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Never vs. joiners-born-out and quitter SEZ self-reported										
SEZ self-reported	0 (0.021)	−0.048 (0.062)	−0.300* (0.177)	−0.004 (0.146)	0.042 (0.052)	0.009 (0.072)	−0.034 (0.022)	−0.041 (0.039)	−0.003 (0.016)	0.032 (0.028)
Observations	355,751	203,384	27,047	34,102	170,691	345,152	355,751	97,652	238,498	238,498
R-squared	0.968	0.878	0.925	0.934	0.964	0.904	0.955	0.954	0.989	0.952
Panel B: Never vs. joiners-born-out and quitter location-SEZs										
SEZ location	0.045 (0.062)	−0.120 (0.613)	0.074 (0.128)	−0.993 (0.830)	−0.153* (0.088)	0.712 (0.559)	0.746 (0.643)	−0.065 (0.094)	−0.120 (0.094)	0.166 (0.107)
Observations	232,888	121,190	16,626	21,220	111,046	227,068	232,888	60,154	232,888	232,888
R-squared	0.978	0.908	0.942	0.948	0.975	0.936	0.968	0.967	0.989	0.951

Note: Standard errors in parentheses and are clustered at firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table 19: Never vs. joiners-born-out and quitter SEZs self-reported large and small

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Large firms										
SEZ self-reported	0.002 (0.047)	−0.096 (0.063)		−0.120 (0.075)	−0.044 (0.111)	−0.063 (0.340)	−0.092** (0.040)	−0.03364 (0.054)	−0.031 (0.037)	0.076 (0.065)
Observations	64,045	62,669	11,643	13,668	38,087	62,343	64,045	42,843	40,408	40,408
R-squared	0.984	0.907	0.939	0.941	0.968	0.917	0.965	0.959	0.991	0.975
Panel A: Small firms										
SEZ self-reported	−0.001 (0.023)	0.001 (0.069)	−0.392** (0.187)	0.030 (0.177)	0.033 (0.060)	0.058 (0.072)	−0.037 (0.025)	−0.019 (0.058)	0.002 (0.018)	0.025 (0.031)
Observations	268,593	121,004	12,555	16,838	121,004	260,627	268,593	44,142	173,654	173,654
R-squared	0.956	0.778	0.911	0.923	0.959	0.899	0.941	0.954	0.986	0.941

Note: Standard errors in parentheses and are clustered at firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Treated firms are identified either through self-reported SEZ status or by location within an SEZ. All regressions include time-varying covariates reflecting firms' historical performance, including the log of lagged employment contracts, gross sales, capital investment in ppe, and profit margins.

Source: South African Revenue Service and the National Treasury.

On the other hand, the estimation results for location-based flip-flopping firms reveal notable differences between large and small firms. As shown in Table 20, the findings for large location-based flip-floppers support the hypothesis that firms may enter SEZs to benefit from SEZ-related advantages during periods of economic boom and subsequently exit during downturns. Specifically, large flip-flopping firms identified by SEZ location exhibit significantly higher net profits and productivity, despite having significantly lower levels of capital investment, wage bills, and employment. In contrast, no significant differences are observed for small location-based flip-flopping firms. These results suggest that large firms may use SEZ entry as a cost-optimization strategy—reducing labour and capital expenditures—while still achieving productivity gains during their tenure within SEZs.

5.5.5 Never vs. joiners-born-in and quitters SEZs

Flip-flopping firms that were established within SEZs exhibit notable differences between self-reported and location-based SEZ identification. Specifically, self-reported flip-flopping firms that were born within SEZs and subsequently quit do not demonstrate statistically significant differences in performance compared to firms that have never operated within SEZs. In contrast, location-based flip-flopping firms originating from SEZs show significant variation relative to non-SEZ firms. As shown in Panel B of Table 21, they display stronger performance outcomes, including higher gross sales, a greater reliance on imports, and enhanced productivity.

These findings suggest that the method of SEZ identification (self-reported vs. location-based) is important when evaluating the performance of flip-flopping firms (joiners and quitters born within SEZ), particularly those that originate from within SEZs. Furthermore, location-based SEZs support the hypothesis that firms can join to exploit SEZ-related benefits during economic booms, as location-based flip-flopping SEZ firms exhibit higher gross sales and increased imports compared with firms that have never been in SEZs.

However, as shown in Table 22, a disaggregated analysis of born-in flip-flopping firms by firm size reveals significant differences between large and small firms. Specifically, Panels A and B show that large self-reported born-in flip-flopping firms exhibit higher levels of export activity but lower inventory investment and productivity compared to their non-SEZ counterparts. In contrast, no significant differences are observed among small self-reported firms relative to their non-SEZ counterparts.

On the other hand, Panels C and D reveal that large location-identified born-in flip-flopping firms tend to be more import intensive, while small firms in this category report higher gross sales and greater productivity compared to firms located outside designated SEZ areas. Overall, the findings highlight that both firm size and the method of SEZ identification (self-reported vs. location-based) yield distinct and important insights into the performance of born-in flip-flopping SEZ firms.

Table 20: Never vs. joiners-born-out and quitter location SEZs large and small

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Large firms										
SEZ location	0.038 (0.168)	0.429*** (0.075)			−0.090*** (0.001)	−0.243** (0.108)	−0.168 (0.135)	−0.052*** (0.005)	−0.448*** (0.107)	0.486* (0.275)
Observations	38,640	37,762	7,058	8,334	23,138	37,824	38,640	25,590	38,640	38,640
R-squared	0.989	0.929	0.951	0.953	0.976	0.941	0.967	0.968	0.991	0.974
Panel B: Small firms										
SEZ location	0.010 (0.057)	−0.422 (0.623)	0.035 (0.119)	−0.996 (0.811)	−0.206 (0.137)	1.123 (0.805)	1.108 (0.944)	−0.206 (0.147)	−0.076 (0.132)	0.086 (0.131)
Observations	170,590	67,576	7,268	9,846	76,400	166,154	170,590	25,128	170,590	170,590
R-squared	0.969	0.821	0.928	0.934	0.971	0.931	0.959	0.965	0.986	0.940

Note: Standard errors in parentheses and are clustered at firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Treated firms are identified either through self-reported SEZ status or by location within an SEZ. All regressions include time-varying covariates reflecting firms' historical performance, including the log of lagged employment contracts, gross sales, capital investment in ppe, and profit margins.

Source: South African Revenue Service and the National Treasury.

Table 21: Never vs. joiners-born-in and quitters SEZs full sample

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Never vs. joiners-born-in and quitters self-reported SEZs full sample										
SEZ self-reported	−0.006 (0.059)	0.231 (0.192)	−0.225 (0.335)	0.029 (0.350)	−0.016 (0.088)	−0.081 (0.220)	−0.001 (0.047)	0.077 (0.180)	−0.026 (0.027)	−0.062 (0.068)
Observations	355,200	203,116	27,043	34,089	170,438	344,618	355,200	97,590	238,182	238,182
R-squared	0.968	0.878	0.925	0.934	0.964	0.904	0.955	0.954	0.989	0.952
Panel B: Never vs. joiners-born-in and quitters location SEZs full sample										
SEZ location	0.090** (0.041)	−0.023 (0.092)	−0.092 (0.184)	0.329** (0.156)	0.043 (0.033)	−0.013 (0.053)	0.033 (0.033)	−0.021 (0.063)	−0.000 (0.021)	0.090** (0.043)
Observations	234,404	121,970	16,836	21,468	111,856	228,536	234,404	60,776	234,404	234,404
R-squared	0.978	0.909	0.942	0.948	0.975	0.936	0.969	0.967	0.989	0.951

Standard errors in parentheses and are clustered at firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Treated firms are identified either through self-reported SEZ status or by location within an SEZ. All regressions include time-varying covariates reflecting firms' historical performance, including the log of lagged employment contracts, gross sales, capital investment in ppe, and profit margins.

Source: South African Revenue Service and the National Treasury.

Table 22: Never vs. joiners-born-in and quitters: self-reported and location-identified SEZs (large and small firms)

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Large firms (self-reported SEZs)										
SEZ self-reported	0.102 (0.149)	0.050 (0.241)	0.156*** (0.037)	— —	−0.229*** (0.088)	0.071 (0.072)	−0.081 (0.096)	−0.068 (0.096)	0.059 (0.060)	−0.243*** (0.089)
Observations	64,045	62,668	11,656	13,674	38,071	62,343	64,045	42,842	40,414	40,414
R-squared	0.984	0.907	0.939	0.941	0.968	0.917	0.965	0.959	0.991	0.975
Panel B: Small firms (self-reported SEZs)										
SEZ self-reported	−0.018 (0.067)	0.380 (0.237)	−0.299 (0.437)	−0.021 (0.348)	0.025 (0.098)	−0.128 (0.265)	0.007 (0.056)	0.068 (0.228)	−0.042 (0.031)	−0.038 (0.078)
Observations	268,075	120,766	12,536	16,818	120,776	260,120	268,075	44,091	173,368	173,368
R-squared	0.956	0.778	0.911	0.923	0.959	0.899	0.941	0.954	0.986	0.941
SEZ location	0.005 (0.034)	0.092 (0.092)	−0.032 (0.105)	0.543* (0.298)	0.016 (0.043)	0.094 (0.120)	−0.034 (0.026)	−0.093 (0.117)	−0.028 (0.050)	0.033 (0.059)
Observations	38,984	38,096	7,150	8,438	23,362	38,166	38,984	25,880	38,984	38,984
R-squared	0.989	0.930	0.952	0.953	0.976	0.942	0.968	0.968	0.991	0.974
Panel D: Small firms (location-identified SEZs)										
SEZ location	0.120** (0.054)	−0.113 (0.144)	−0.073 (0.392)	0.099 (0.209)	0.029 (0.045)	−0.048 (0.059)	0.053 (0.047)	−0.022 (0.089)	0.001 (0.025)	0.119** (0.054)
Observations	171,570	67,896	7,362	9,950	76,890	167,096	171,570	25,358	171,570	171,570
R-squared	0.969	0.821	0.928	0.934	0.971	0.932	0.959	0.965	0.986	0.940

Note: Standard errors in parentheses and are clustered at firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Treated firms are identified either through self-reported SEZ status or by location within an SEZ. All regressions include time-varying covariates reflecting firms' historical performance, including the log of lagged employment contracts, gross sales, capital investment in ppe, and profit margins.

Source: South African Revenue Service and the National Treasury.

6 Conclusion

This study examines whether Special Economic Zones in South Africa are meeting their intended role as engines of economic development. South Africa has invested in SEZs through infrastructure development, regulatory concessions, and tax incentives, with the expectation that these zones will boost exports, attract investment, stimulate productivity, and create employment opportunities for local people. Yet, there are no studies that examine how the country's SEZ programme contributes to broader economic development. We bridge this literature gap by examining how firms operating in SEZs perform compared to non-SEZ firms across key economic indicators, including exports, employment, productivity, and sales. Using comprehensive firm-level tax and customs data, and employing two complementary SEZ identification strategies (firms that self-reported as operating in an SEZ and firms with employee workplace locations in SEZs), we assess the developmental performance of SEZs within the South African context.

Our estimates suggest that SEZs are not fully achieving their intended developmental objectives in South Africa. Specifically, firms operating within SEZs tend to exhibit lower levels of export and productivity compared to their non-SEZ counterparts. We also observe a significant variation in the impact of SEZs on export participation, depending on the method used to identify firms. Self-reported SEZ firms exhibit significantly lower export performance compared to non-SEZ firms. While other performance metrics, such as total assets, employment, productivity, and sales, remain statistically insignificant, they tend to suggest lower performance, especially for small self-reported SEZ firms, while large self-reported SEZ firms report higher wage bills.

Furthermore, SEZ firms that are identified by their employees' workplace locations demonstrate more positive outcomes. On average they have higher gross sales, greater asset accumulation, and more employment contracts compared to firms outside designated SEZ areas. This positive effect is even stronger among small location-based SEZ firms. These small firms report higher gross sales; increased investment in plant, property, and equipment; higher employment levels; and improved productivity. While large location-based SEZ firms tend to exhibit higher import volumes and greater investment in plant, property, and equipment, their performance in other metrics, including exports and employment, is insignificant. Firm ownership and size significantly influence SEZ effectiveness in South Africa: domestically owned firms generally outperform foreign-owned ones, especially in sales and productivity, while small foreign-owned firms report higher profits and employment but are less export oriented. Firms that enter and remain in SEZs perform better than those that never join or join late. Moreover, evidence suggests that firms are drawn to SEZs more for non-monetary benefits—such as infrastructure and public services—than for direct financial incentives, highlighting inefficiencies in the current SEZ incentive structure.

The mixed performance of firms within South Africa's SEZs suggests an urgent need to recalibrate the country's SEZ policy framework. The evidence that self-reported SEZ firms underperform non-SEZ firms—particularly in exports and productivity—raises concerns about both enforcement and the targeting of incentives. Policymakers should consider strengthening the monitoring and verification of SEZ participation, ensuring that only firms genuinely operating within designated zones receive benefits. Moreover, the current incentive structure appears insufficient to attract export-oriented investment or improve firm competitiveness. This calls for a shift in focus from broad tax concessions to more targeted, performance-linked incentives that reward export growth, job creation, and productivity gains.

At the same time, the relatively better performance of location-based SEZ firms, particularly small, domestically owned businesses, points to the value of spatially targeted infrastructure and service provision. These firms appear to benefit more from improved logistics, access to utilities, and proximity to government support than from financial incentives alone. As such, SEZ policy should prioritize infrastructure investment, efficient service delivery, and integration with local supply chains over blanket tax exemptions. Additionally, support should be tailored to small firms with high growth potential, including technical assistance, simplified compliance procedures, and access to markets. Finally, the positive outcomes observed among early entrants suggest that long-term engagement within SEZs matters; policies that reduce entry and exit costs and improve the business environment within zones could help retain firms and deepen their developmental impact.

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A Appendix

Table A1: Self-reported and employee contract location matched SEZ firm, large firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	−0.064 (0.068)	−0.075 (0.068)	−0.090 (0.133)	0.077 (0.163)	−0.036 (0.070)	0.129 (0.104)	0.020 (0.030)	0.026 (0.066)	0.003 (0.031)	−0.067 (0.076)
SEZ location	0.033 (0.025)	−0.029 (0.039)	−0.058 (0.106)	−0.028 (0.124)	−0.004 (0.043)	0.001 (0.055)	−0.027 (0.030)	0.058 (0.037)	0.010 (0.030)	0.022 (0.032)
SEZ self-reported × SEZ location	−0.019 (0.089)	−0.052 (0.129)	0.981 (0.848)	0.206 (0.457)	−0.032 (0.116)	−0.448** (0.190)	0.049 (0.099)	0.004 (0.113)	0.296 (0.196)	−0.155 (0.177)
Observations	84,724	82,996	15,366	18,075	48,939	76,544	84,724	55,585	82,285	82,285
R-squared	0.980	0.905	0.932	0.936	0.965	0.910	0.961	0.953	0.980	0.956
Panel B: With lagged controls subsample										
SEZ self-reported	0.001 (0.036)	−0.086 (0.065)	0.274*** (0.099)	0.587 (0.456)	0.136 (0.114)	0.267 (0.179)	−0.002 (0.038)	0.094* (0.052)	−0.007 (0.028)	0.009 (0.050)
SEZ location	0.020 (0.023)	−0.026 (0.077)	0.105 (0.137)	0.360* (0.214)	−0.042 (0.056)	0.170* (0.081)	0.015 (0.029)	−0.023 (0.068)	0.022 (0.034)	−0.002 (0.039)
SEZ self-reported × SEZ location	−0.085** (0.102)	−0.872*** (0.127)	0.043 (0.065)	−0.706*** (0.200)	0.278*** (0.048)	−0.066 (0.086)	0.359*** (0.045)	−0.444*** (0.064)	(0.043)	
ln(contracts) _{t−1}	0.123*** (0.010)	0.0737*** (0.018)	0.124* (0.065)	0.152* (0.079)	0.108*** (0.022)	0.148*** (0.031)	0.078*** (0.011)	0.133*** (0.020)	0.197*** (0.014)	−0.074*** (0.014)
ln(gross sales) _{t−1}	−0.036** (0.015)	−0.054** (0.021)	−0.007 (0.086)	0.096* (0.056)	0.039 (0.0283)	0.193*** (0.028)	0.061*** (0.012)	0.048*** (0.018)	0.079*** (0.008)	−0.114*** (0.016)
ln(ppe) _{t−1}	0.008*** (0.002)	−0.001 (0.003)	0.006 (0.017)	−0.006 (0.011)	0.009* (0.004)	−0.151*** (0.02)	0.008*** (0.002)	0.010*** (0.003)	0.006*** (0.001)	0.002 (0.002)
profit margin _{t−1}	0.007 (0.009)	−0.055 (0.039)	0.057 (0.052)	−0.039*** (0.015)	0.079 (0.112)	−0.013 (0.022)	0.001 (0.009)	−0.059* (0.034)	−0.004 (0.010)	0.010 (0.017)
Observations	40,640	39,702	7,682	8,996	24,564	39,796	40,640	27,260	40,570	40,570
R-squared	0.990	0.934	0.953	0.954	0.977	0.944	0.971	0.971	0.991	0.974

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: South African Revenue Service and the National Treasury.

Table A2: Self-reported and employee contract location matched SEZ small firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	0.015 (0.016)	0.066 (0.058)	−0.049 (0.159)	0.109 (0.219)	0.020 (0.042)	0.074 (0.056)	0.024 (0.026)	−0.040 (0.064)	0.002 (0.015)	0.012 (0.019)
SEZ location	0.117*** (0.022)	0.048 (0.062)	0.106 (0.133)	−0.060 (0.114)	0.063* (0.034)	0.023 (0.055)	0.098*** (0.025)	0.056* (0.033)	−0.016 (0.018)	0.129*** (0.023)
SEZ self-reported × SEZ location	0.083 (0.076)	0.214 (0.171)	1.477 (1.058)	0.227 (0.484)	0.059 (0.232)	−0.030 (0.150)	0.048 (0.079)	0.072 (0.221)	0.146 (0.117)	0.048 (0.198)
Observations	371,109	175,740	15,979	21,752	156,952	323,054	371,109	53,927	359,410	359,410
R-squared	0.943	0.777	0.905	0.906	0.955	0.893	0.931	0.944	0.960	0.900
Panel B: With lagged controls subsample										
SEZ self-reported	−0.015 (0.025)	0.061 (0.086)	−0.297* (0.162)	0.424** (0.185)	0.043 (0.059)	−0.018 (0.074)	−0.005 (0.027)	0.068 (0.079)	0.004 (0.014)	−0.019 (0.027)
SEZ location	0.125*** (0.040)	−0.019 (0.122)	−0.103 (0.359)	−0.016 (0.164)	0.013 (0.041)	0.039 (0.060)	0.104** (0.050)	0.051 (0.078)	0.053** (0.025)	0.074* (0.039)
SEZ self-reported × SEZ location	0.151* (0.087)	1.038 (0.801)	0.757*** (0.169)		0.926 (0.740)	0.084 (0.138)	−0.138 (0.115)	0.270 (0.266)	−0.138 (0.127)	0.255*** (0.063)
ln(contracts) _{<i>t</i>−1}	0.168*** (0.007)	0.054** (0.021)	0.121* (0.065)	0.076 (0.055)	0.070*** (0.012)	0.152*** (0.017)	0.095*** (0.007)	0.135*** (0.018)	0.204*** (0.005)	−0.034*** (0.007)
ln(gross sales) _{<i>t</i>−1}	−0.117*** (0.009)	−0.147*** (0.021)	0.045 (0.076)	0.076 (0.061)	0.057*** (0.011)	0.170*** (0.015)	0.049*** (0.006)	0.040*** (0.011)	0.059*** (0.003)	
ln(ppe) _{<i>t</i>−1}	0.007*** (0.001)	−0.018*** (0.004)	−0.012 (0.019)	−0.012 (0.009)	0.006*** (0.002)	−0.119*** (0.007)	−0.004 (0.003)	0.013*** (0.004)	0.004*** (0.001)	0.003*** (0.001)
profit margin _{<i>t</i>−1}	−7.43e-6*** (7.24e-8)	−0.120*** (0.039)	−0.018 (0.060)	0.061 (0.056)	0.001 (0.001)	−1.35e-6*** (1.20e-7)	−2.43e-7*** (5.05e-8)	−8.87e-5 (0.001)	−5.41e-7*** (2.69e-8)	−6.88e-6*** (7.22e-8)
Observations	175,022	69,216	7,700	10,346	78,848	170,464	175,022	26,490	174,754	174,754
R-squared	0.970	0.823	0.928	0.937	0.972	0.932	0.959	0.967	0.986	0.941

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table A3: Ownership heterogeneity; effect of self-reported on SEZ status of firm performance

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	0.012 (0.012)	0.074** (0.029)	−0.044 (0.113)	0.057 (0.116)	0.033 (0.025)	0.028 (0.031)	−0.002 (0.017)	−0.011 (0.037)	−0.003 (0.014)	0.010 (0.018)
FDI	0.0501** (0.020)	0.035 (0.041)	0.034 (0.063)	0.067 (0.053)	0.052 (0.036)	0.113*** (0.043)	0.064*** (0.023)	−0.018 (0.022)	−0.013 (0.013)	0.048** (0.020)
SEZ self-reported × FDI	0.258 (0.252)	0.367 (0.409)	1.459 (0.928)	0.477 (0.637)	−0.167 (0.163)	0.352 (0.381)	0.0174 (0.088)	0.130 (0.112)	0.341*** (0.106)	0.377 (0.427)
Observations	870,535	529,329	47,296	60,932	360,140	748,955	870,535	176,895	469,109	469,109
R-squared	0.948	0.861	0.904	0.912	0.952	0.872	0.929	0.938	0.967	0.915
Panel B: With lagged controls										
SEZ self-reported	−0.011 (0.017)	−0.025 (0.055)	−0.259** (0.108)	0.088 (0.172)	0.049 (0.037)	0.027 (0.056)	−0.010 (0.019)	0.030 (0.042)	−0.006 (0.013)	−0.011 (0.024)
FDI	0.030 (0.022)	0.065 (0.067)	0.104 (0.105)	0.089 (0.101)	0.097 (0.069)	0.096* (0.052)	0.079*** (0.0286)	−0.013 (0.030)	0.021 (0.015)	0.007 (0.025)
SEZ self-reported × FDI	−0.071*** (0.018)	— —	−0.443*** (0.117)	−0.314* (0.177)	0.589*** (0.038)	3.168*** (0.060)	0.109*** (0.020)	0.322*** (0.044)	−0.005 (0.014)	−0.026 (0.025)
ln(contracts) _{<i>t</i>−1}	0.111*** (0.004)	0.053*** (0.011)	0.108*** (0.031)	0.119*** (0.030)	0.065*** (0.008)	0.101*** (0.011)	0.073*** (0.005)	0.130*** (0.009)	0.205*** (0.005)	−0.037*** (0.007)
ln(gross sales) _{<i>t</i>−1}	0.077*** (0.006)	−0.008 (0.011)	0.145*** (0.036)	0.135*** (0.029)	0.096*** (0.008)	0.202*** (0.010)	0.114*** (0.004)	0.119*** (0.007)	0.062*** (0.003)	−0.170*** (0.008)
ln(ppe) _{<i>t</i>−1}	0.010*** (0.001)	−0.010*** (0.002)	0.005 (0.008)	−0.003 (0.005)	0.009*** (0.001)	0.088*** (0.005)	0.015*** (0.001)	0.015*** (0.002)	0.004*** (0.000)	0.004*** (0.001)
profit margin _{<i>t</i>−1}	−4.83e-6*** (4.69e-8)	−0.019 (0.015)	0.001 (0.007)	0.004 (0.024)	−0.001*** (0.000)	−1.67e-6*** (8.24e-8)	−9.16e-7*** (3.45e-8)	−0.004*** (0.000)	−5.65e-7*** (2.38e-8)	−6.93e-6*** (6.37e-8)
Observations	357,818	204,582	27,153	34,214	171,478	347,140	357,818	97,978	239,874	239,874
R-squared	0.968	0.877	0.925	0.934	0.964	0.904	0.955	0.954	0.989	0.952

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table A4: Ownership heterogeneity; effect of self-reported on SEZ status of firm performance; large firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	0.014 (0.012)	0.076** (0.030)	−0.105 (0.143)	−0.121 (0.152)	0.030 (0.027)	0.030 (0.033)	−0.004 (0.018)	−0.031 (0.052)	0.004 (0.015)	0.012 (0.019)
FDI	0.116*** (0.038)	−0.092 (0.115)	0.126 (0.118)	0.041 (0.102)	0.129* (0.070)	0.271*** (0.076)	0.109*** (0.029)	0.031 (0.039)	−0.014 (0.022)	0.100*** (0.037)
SEZ self-reported × 1.FDI	0.841* (0.491)	2.194*** (0.115)	0.243* (0.144)	0.284* (0.159)	0.146 (0.406)	1.121*** (0.307)	−0.026 (0.086)	0.400*** (0.057)	0.419*** (0.104)	0.426 (0.549)
Observations	718,677	379,608	23,382	32,481	277,907	610,472	718,677	84,772	359,410	359,410
R-squared	0.930	0.771	0.894	0.896	0.945	0.868	0.910	0.938	0.960	0.900
Panel B: With lagged controls										
SEZ self-reported	−0.009 (0.020)	−0.003 (0.060)	−0.331** (0.132)	−0.070 (0.205)	0.041 (0.043)	0.037 (0.059)	−0.008 (0.022)	−0.007 (0.060)	0.003 (0.014)	−0.017 (0.027)
FDI	0.083** (0.037)	0.180 (0.162)	−0.033 (0.224)	−0.111 (0.189)	0.196 (0.135)	0.161* (0.088)	0.098** (0.041)	−0.009 (0.053)	0.035* (0.021)	0.003 (0.045)
SEZ self-reported × 1.FDI	−0.061*** (0.020)	— —	−0.372** (0.147)	−0.070 (0.213)	0.617*** (0.045)	3.227*** (0.064)	0.128*** (0.023)	0.392*** (0.062)	−0.007 (0.015)	−0.015 (0.028)
ln(contracts) _{<i>t</i>−1}	0.113*** (0.005)	0.044*** (0.014)	0.144*** (0.044)	0.064 (0.040)	0.059*** (0.009)	0.106*** (0.013)	0.073*** (0.006)	0.123*** (0.013)	0.204*** (0.005)	−0.034*** (0.008)
ln(gross sales) _{<i>t</i>−1}	0.061*** (0.006)	−0.080*** (0.014)	0.084* (0.046)	0.121*** (0.040)	0.092*** (0.009)	0.192*** (0.012)	0.106*** (0.005)	0.105*** (0.010)	0.059*** (0.003)	−0.176*** (0.009)
ln(ppe) _{<i>t</i>−1}	0.009*** (0.001)	−0.013*** (0.003)	−0.002 (0.012)	−0.005 (0.006)	0.008*** (0.002)	0.099*** (0.006)	0.014*** (0.002)	0.014*** (0.003)	0.004*** (0.001)	0.003*** (0.001)
profit margin _{<i>t</i>−1}	−4.69e-6*** (5.25e-8)	0.004 (0.015)	−0.006 (0.008)	0.023 (0.033)	−0.001*** (0.000)	−1.59e-6*** (9.56e-8)	−8.50e-7*** (3.99e-8)	−0.004*** (0.000)	−5.42e-7*** (2.69e-8)	−6.89e-6*** (7.23e-8)
Observations	270,291	121,842	12,615	16,898	121,624	262,257	270,291	44,314	174,754	174,754
R-squared	0.956	0.778	0.911	0.923	0.958	0.899	0.941	0.954	0.986	0.941

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table A5: Ownership heterogeneity; effect of self-reported on SEZ status of firm performance; small firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ self-reported	−0.028 (0.046)	−0.026 (0.048)	0.007 (0.263)	0.247 (0.152)	0.013 (0.054)	0.108 (0.113)	0.056 (0.045)	0.013 (0.052)	0.016 (0.031)	−0.075 (0.073)
FDI	−0.021 (0.018)	0.029 (0.039)	−0.026 (0.084)	0.061 (0.065)	−0.028 (0.038)	−0.080 (0.053)	0.002 (0.040)	−0.044* (0.022)	−0.011 (0.015)	−0.002 (0.021)
SEZ self-reported × 1.FDI	−0.089 (0.071)	−0.003 (0.290)	2.688*** (0.264)	0.236 (0.774)	−0.276*** (0.097)	−0.110 (0.416)	−0.011 (0.094)	−0.059 (0.123)	0.047 (0.031)	0.137* (0.073)
Observations	121,636	119,130	20,235	23,867	68,000	110,341	121,636	78,461	82,285	82,285
R-squared	0.975	0.886	0.921	0.925	0.959	0.891	0.952	0.946	0.980	0.956
Panel B: With controls										
SEZ self-reported	0.003 (0.037)	−0.058 (0.057)	0.008 (0.182)	0.532 (0.328)	0.046 (0.077)	0.234 (0.246)	−0.038 (0.029)	0.074* (0.044)	−0.001 (0.029)	0.000 (0.049)
FDI	−0.043* (0.024)	−0.036 (0.070)	0.216* (0.129)	0.087 (0.123)	−0.004 (0.062)	−0.050 (0.064)	0.019 (0.044)	−0.016 (0.035)	−0.017 (0.023)	0.011 (0.028)
ln(contracts) _{<i>t</i>−1}	0.092*** (0.008)	0.056*** (0.013)	0.091** (0.045)	0.165*** (0.052)	0.076*** (0.016)	0.109*** (0.022)	0.073*** (0.008)	0.125*** (0.014)	0.197*** (0.013)	−0.074*** (0.014)
ln(gross sales) _{<i>t</i>−1}	0.104*** (0.012)	0.044*** (0.015)	0.161*** (0.059)	0.203*** (0.045)	0.087*** (0.021)	0.194*** (0.022)	0.108*** (0.009)	0.122*** (0.014)	0.079*** (0.008)	−0.114*** (0.016)
ln(ppe) _{<i>t</i>−1}	0.008*** (0.001)	0.001 (0.002)	0.001 (0.011)	−0.000 (0.008)	0.010*** (0.003)	0.006 (0.015)	0.011*** (0.002)	0.011*** (0.003)	0.006*** (0.001)	0.002 (0.002)
profit margin _{<i>t</i>−1}	−0.010 (0.017)	−0.049* (0.026)	0.038 (0.050)	−0.039** (0.017)	0.141* (0.080)	0.022 (0.033)	0.017 (0.018)	−0.040* (0.024)	−0.004 (0.010)	0.011 (0.017)
Observations	64,302	62,923	11,678	13,706	38,210	62,594	64,302	42,968	40,570	40,570
R-squared	0.984	0.907	0.939	0.941	0.968	0.916	0.965	0.959	0.991	0.974

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table A6: Ownership heterogeneity; effect of location-SEZ status of firm performance; large firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ location	0.038 (0.026)	−0.012 (0.039)	−0.052 (0.111)	−0.106 (0.134)	−0.005 (0.046)	−0.002 (0.057)	−0.009 (0.034)	0.068* (0.037)	0.008 (0.028)	0.029 (0.030)
FDI	−0.007 (0.020)	0.065 (0.045)	−0.130 (0.094)	0.029 (0.075)	−0.018 (0.045)	−0.069 (0.057)	0.023 (0.044)	−0.031 (0.029)	−0.015 (0.019)	0.008 (0.024)
SEZ location × FDI	−0.046 (0.036)	−0.196** (0.088)	−0.013 (0.153)	0.303* (0.169)	0.0128 (0.060)	0.0167 (0.090)	−0.181 (0.161)	−0.083 (0.069)	0.0322 (0.089)	−0.0769 (0.088)
Panel B: With lagged controls										
SEZ location	0.019 (0.024)	−0.044 (0.079)	0.117 (0.149)	0.349* (0.182)	−0.034 (0.057)	0.171** (0.081)	0.017 (0.029)	−0.037 (0.072)	0.026 (0.035)	−0.007 (0.041)
FDI	−0.008 (0.022)	−0.0377 (0.092)	0.208 (0.162)	0.152 (0.170)	0.098 (0.081)	−0.011 (0.072)	0.052 (0.0703)	−0.024 (0.046)	−0.016 (0.026)	0.009 (0.029)
SEZ location × FDI	0.011 (0.043)	0.127 (0.114)	−0.102 (0.246)	0.055 (0.323)	−0.051 (0.098)	−0.083 (0.148)	−0.001 (0.075)	0.124* (0.072)	−0.007 (0.027)	0.018 (0.048)
ln(contracts) _{<i>t</i>−1}	0.123*** (0.010)	0.074*** (0.018)	0.122* (0.065)	0.153* (0.079)	0.109*** (0.022)	0.148*** (0.031)	0.078*** (0.011)	0.134*** (0.020)	0.197*** (0.013)	−0.074*** (0.014)
ln(gross sales) _{<i>t</i>−1}	−0.036** (0.015)	−0.053** (0.021)	−0.006 (0.086)	0.096* (0.056)	0.039 (0.028)	0.193*** (0.028)	0.061*** (0.012)	0.048*** (0.018)	0.079*** (0.008)	−0.114*** (0.016)
ln(ppe) _{<i>t</i>−1}	0.008*** (0.002)	−0.001 (0.003)	0.006 (0.017)	−0.006 (0.011)	0.007** (0.004)	−0.151*** (0.021)	0.008*** (0.002)	0.010*** (0.003)	0.006*** (0.001)	0.002 (0.002)
profit margin _{<i>t</i>−1}	0.007 (0.010)	−0.055 (0.039)	0.073 (0.055)	−0.037*** (0.013)	0.080 (0.112)	−0.013 (0.021)	0.002 (0.009)	−0.059* (0.035)	−0.004 (0.010)	0.011 (0.017)
Observations	40,640	39,702	7,682	8,996	24,564	39,796	40,640	27,260	40,570	40,570
R-squared	0.990	0.934	0.953	0.954	0.977	0.944	0.971	0.971	0.991	0.974

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.

Table A7: Ownership heterogeneity; effect of location—SEZ status of firm Performance; small firms

Variables	(1) ln(gross sales)	(2) ln(net profits)	(3) ln(exports)	(4) ln(imports)	(5) ln(inventory)	(6) ln(ppe)	(7) ln(total assets)	(8) ln(total wages)	(9) ln(contracts)	(10) ln(productivity)
Panel A: Full sample										
SEZ location	0.118*** (0.022)	0.050 (0.0619)	0.064 (0.144)	−0.051 (0.125)	0.063* (0.034)	0.018 (0.055)	0.097*** (0.025)	0.047 (0.0344)	−0.017 (0.018)	0.131*** (0.023)
FDI	0.091** (0.039)	−0.002 (0.131)	0.064 (0.125)	0.090 (0.108)	0.057 (0.053)	0.178** (0.079)	0.085** (0.033)	0.002 (0.046)	−0.018 (0.022)	0.110*** (0.038)
SEZ location × FDI	−0.056 (0.061)	−0.220 (0.386)	0.171 (0.218)	−0.063 (0.259)	0.023 (0.062)	0.295 (0.250)	0.047 (0.097)	0.116 (0.083)	0.085 (0.074)	−0.116 (0.090)
Panel B: With lagged controls										
SEZ location	0.127*** (0.041)	−0.022 (0.123)	−0.162 (0.353)	0.004 (0.168)	0.011 (0.041)	0.038 (0.060)	0.104** (0.050)	0.043 (0.079)	0.051** (0.025)	0.078** (0.039)
FDI	0.048 (0.045)	0.129 (0.183)	−0.305* (0.176)	−0.129 (0.205)	0.049 (0.071)	0.033 (0.088)	0.012 (0.047)	0.023 (0.066)	0.025 (0.020)	0.023 (0.045)
SEZ location × FDI	−0.221*** (0.081)	0.343*** (0.113)	0.580 (1.118)	−0.227 (0.428)	0.153 (0.096)	0.224 (0.292)	0.005 (0.094)	0.204 (0.146)	0.222** (0.106)	−0.445*** (0.147)
ln(contracts) _{<i>t</i>−1}	0.168*** (0.007)	0.054** (0.021)	0.124* (0.065)	0.077 (0.055)	0.070*** (0.012)	0.152*** (0.017)	0.095*** (0.007)	0.135*** (0.018)	0.204*** (0.005)	−0.034*** (0.007)
ln(gross sales) _{<i>t</i>−1}	−0.117*** (0.009)	−0.147*** (0.021)	0.043 (0.076)	0.076 (0.061)	0.058*** (0.011)	0.170*** (0.015)	0.049*** (0.006)	0.040*** (0.011)	0.059*** (0.003)	−0.177*** (0.009)
ln(ppe) _{<i>t</i>−1}	0.007*** (0.001)	−0.018*** (0.004)	−0.012 (0.019)	−0.012 (0.009)	0.006*** (0.002)	−0.119*** (0.007)	−0.004 (0.003)	0.013*** (0.004)	0.004*** (0.001)	0.003*** (0.001)
profit margin _{<i>t</i>−1}	−7.43e-6*** (7.24e-8)	−0.120*** (0.0393)	−0.018 (0.060)	0.062 (0.056)	0.001 (0.001)	−1.35e-6*** (1.20e-7)	−2.43e-7*** (5.05e-8)	−9.23e-5 (0.001)	−5.41e-7*** (2.69e-8)	−6.88e-6*** (7.22e-8)
Observations	175,022	69,216	7,700	10,346	78,848	170,464	175,022	26,490	174,754	174,754
R-squared	0.970	0.823	0.928	0.937	0.972	0.932	0.959	0.967	0.986	0.941

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: South African Revenue Service and the National Treasury.