

## *Original Paper*

# The Effects of Industrial Park Development on Export Earning, Employment and FDI Attraction: Evidence from Ethiopia

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### **Abstract**

*This study examines the effects of industrial parks on export earnings, employment creation, and FDI attraction in Ethiopia. Furthermore, the study aims to identify the constraints and potential to achieve sustained and dynamic results expected from the industrial park development. Despite varying degrees of successes and failures, several countries have utilized industrial park and other types of special economic zones as a policy instrument for fostering economic transformation. Ethiopia is one of the African countries that have adopted industrial park development as a policy tool to enhance its economic growth and transformation. However, the effect of the industrial park policy initiative of the country is not well researched. The analysis of the study reveals that industrial parks in Ethiopia have contributed statistically significant effects on export earnings, employment creation, and FDI attraction with significant levels of  $p = <.001$ . The analysis also showed that the top five binding constraints for the effectiveness of the industrial park development are low labor productivity, domestic raw material supply constraints, weak forward and backward linkage, transport cost and logistic constraints, and institutions' capacity constraints. On the other hand, the availability of a trainable labor force, raw material potential, preferential policies and incentives, the economic growth of the country, and the labor wage rise in China and other emerging countries are identified as the top five potentials and opportunities to achieve sustained and dynamic benefits of industrial park development in Ethiopia.*

### **Keywords**

*industrial park, manufacturing, export earnings, employment creation, FDI, special economic zones*

## 1. Introduction

Industrial parks and other Special Economic Zones (SEZs) have been used by several countries as a policy instrument to enhance economic growth and transformation. However, the performance results are mixed with successes and failures. China, South Korea, and Malaysia from Asia, Dominican Republic and Costa Rica from Latin America, and Mauritius from Africa, are among the successful countries (Farole, 2011). In reality, the majority of successful economic zones are situated in East Asia and Latin America, while most of the unsuccessful zones are found in Africa (FIAS, 2008). In terms of applying SEZs to achieve a significant economic transformation, China is leading ahead with its best practices (Zeng, 2015).

By setting the target of constructing at least four industrial parks, Ethiopia has initiated the development of industrial parks as a policy tool to accelerate its economic development in its first five-year growth and transformation national plan (2010/11-2015/16). Industrial Park Proclamation No.886/2015 was enacted by the parliament to determine the legal framework of the industrial park development. The Industrial Parks Development Corporation (IPDC) was also established by the Council of Ministers Regulation No. 326/2014 as a public enterprise mandated to develop and administer federal public industrial parks. According to the proclamation, the industrial park can be developed by the government, the private sector, or jointly between the government and the private sector.

As a result, Bole Lemi industrial park which is located, on the outskirts of Addis Ababa, began operation in 2014 as the first public industrial park. The second public industrial park, Hawassa Industrial Park, began operations in 2016. Currently, twelve public industrial parks namely Bole Lemi, Hawassa, Kombolcha, Mekele, Adama, Bahirdar, Deberebirhan, Kilinto, Jimma, Addis Industrial Village, and Ethio ICT Park are operating in different parts of the country (IPDC, 2022). Most of these industrial parks specialize in labor-intensive sectors mainly textile and leather industries and engage in export processing activities. It is also planned to construct agro-industrial parks in the regional states. To date, three integrated agro-industrial parks (Bure in Amhara regional state, Bulbula in Oromia regional state, and Yirgalm in Sidama regional state) have started operations.

Moreover, six foreign industrial parks are also being operational in Ethiopia (EIC, 2021). One of the Chinese overseas SEZs called Easter Industrial Park is the first pioneer park established in Ethiopia in 2010. Eastern Industrial Park is “one of the best examples of Chinese investment in manufacturing in the African continent” (UNIDO, 2018, p. 23). Huajian Light Industrial City is another privately owned Chinese industrial park being operational. Modjo George Shoe industrial park (Taiwan), DBL industrial park (Bangladesh), Vogue industrial park (Hong Kong), and China Communications Construction Company (CCCC) Arerti industrial park have also begun operation.

According to Farole (2011), static benefits such as investment attraction, job creation, and export earnings can be achieved in a short period of time by using economic zones as a policy tool. Whereas dynamic benefits (spillover effects to the local economy, technology transfer, and structural transformation) are achieved in a relatively longer period. From this assumption, the static outcomes of the industrial parks in Ethiopia can be scientifically measured. However, it is too early to examine the dynamic outcomes because of the relatively young age of the parks. Thus, examining the effects of industrial parks on export, employment, and FDI and assessing the binding constraints, potentials, and opportunities to achieve the expected dynamic benefits is timely and critically important to suggest possible policy implications.

Few studies have been conducted on the performance of industrial parks in Ethiopia. For instance, Feyisa and Gebremariam (2019) conducted descriptive assessments of the performance of industrial parks in Ethiopia and they found that the industrial parks are contributing to FDI and job creation. Zhang et al (2018) also conducted a comprehensive assessment and revealed that the industrial parks have contributed to increasing government revenue and export, creating jobs, increasing export, and attracting FDI, although the parks and resident firms are experiencing multi-faceted challenges. However, the existing studies used descriptive analysis as methodology and have gaps in showing the effects of industrial parks on manufacturing firms' performance through empirical research methods. To the best of my knowledge, there is no study conducted that shows the performance of the manufacturing firms operating in the industrial parks in comparison with those operating outside the parks in Ethiopia. Thus, this study aims to contribute to filling the gaps in the existing studies by conducting original surveys both from manufacturing firms operating inside and outside the industrial parks and by using both descriptive and empirical research methods. Accordingly, the study aims to achieve the following objectives and test the hypotheses.

#### Objectives of the Study

- To examine the effects of industrial parks on export earnings, employment creation, and FDI attraction
- To assess the binding constraints, potentials and opportunities that affect the effectiveness of industrial park development as a policy tool to foster industrialization in Ethiopia.

#### Hypotheses

Hypothesis (Ha) 1- Industrial parks are likely to have significant effect on export earnings

Hypothesis (Ha) 2- Industrial parks are likely to have significant effect on employment

Hypothesis (Ha) 3- Industrial parks are likely to have significant effect on FDI attraction

The remaining part of the paper is organized into five sections. The first section deals with the review of related literature and the second section provides the methodology of the study. The empirical results and the discussion of the findings are presented in the third section. The binding constraint, potentials

and opportunities are discussed in the fourth section. The final section deals with the conclusion and policy implications of the study.

## 2. Literature Review

### 2.1 Definition and Concepts

Economic zones are operating worldwide in different names and forms. Despite the varieties of names and forms, different authors use the term Special Economic Zones (SEZs) to encompass the varieties of modern economic zones. The term SEZ covers different varieties of zones, such as industrial parks, export-processing zones, free trade zones, science and innovation parks, high-tech zones, and freeports (Zeng, 2015). Even though no common and agreed definition encompasses the various forms of SEZs, different authors provided comprehensive definitions of the term. The definitions of FIAS (2008) and Farole (2011) are frequently used in the existing literature. SEZs are generally defined as “geographically delimited areas administered by a single body, offering certain incentives (generally duty-free importing and streamlined customs procedures, for instance) to businesses which physically locate within the zone” (FIAS, 2008, p. 2). According to Farole (2011) SEZs are broadly defined as “demarcated geographic areas contained within a country’s national boundaries where the rules of business are different from those that prevail in the national territory” (p. 23).

Industrial Park is defined in the literature narrowly as one of the forms of SEZs mainly focused on industrial development, and also defined broadly as the term used interchangeably with SEZs. According to Zeng (2016), industrial Parks are largely manufacturing-based sites that normally offer different incentives and benefits for manufacturing firms. An industrial park is an area reserved for industrial development based on principles of allocation of specialized infrastructure in selected areas to decrease costs and build the capability of a country to attract new investors (Vidova, 2010).

The Ethiopian industrial parks proclamation No.886/2015 in its article 2 (1) defines an industrial park as “an area with a distinct boundary designated by the appropriate organ...based on a planned fulfillment of infrastructure and various services such as road, electric power, and water, one-stop-shop and have special incentive schemes.... and includes special economic zones, technology parks, export processing zones, agro-processing zone, free trade zones and the like”. The definition of the proclamation comprises the major elements of the SEZs definition provided by FIAS (2008), and Farole (2011) despite it uses the industrial park as a generic term for various zones such as special economic zones, technology parks, export processing zones, and free trade zones. SEZs and industrial parks are also used interchangeably in different literature (Azmachi, 2019). Thus, for this study industrial parks, SEZs, and economic zones are used interchangeably.

### 2.2 Industrial Parks as a Policy Tool: Rationale and Theoretical Justification

The rationale for using industrial parks as a policy tool is one of the hotly debated issues in the

economic development literature. The debates are mainly associated with the theoretical difference in the role of government in economic development. The debates can be mainly categorized into two theoretical stands: (1) the orthodox approach, which draws on neoclassical economic theory; and (2) the heterodox approach, which draws on endogenous growth theory and the new institutional economics (Warr & Menon, 2016).

The orthodox approach to SEZs is pessimistic and doubts their role in allocative efficiency. The neoclassical approach views economic zones as a second-best option to national trade liberalization; as such, SEZs are regarded as a transitory policy instrument until the country adopts full-fledged market reforms (Warr, 1989; Aggarwal, 2017; Farole & Akinci, 2011). The early literature, especially the findings of Hamada (1975) was pessimistic about the benefits of economic zones for economic development (Farole, 2011). Hamada discredits the benefits achieved by FDI by arguing the little relevance of the technology accompanied with FDI in the zone for the host country and the possibility to distort the host country's production structure (Aggarwal, 2017).

On the other hand, the heterodox perspective places more emphasis on dynamic impacts and views SEZs as playing a more catalytic role in fostering overall economic growth. Since the late 1980s, this method has dominated a large portion of the research on SEZs. The heterodox approach sees SEZs as having dynamic spillover effects, extending advantages beyond their enclaves through their impact on backward connections, human capital, technology, and institutional reforms. (Aggarwal, 2017; Farole & Akinci, 2011).

The development of industrial parks was suggested by New Structural Economics (NSE) (promoted by Justin Lin) as one of the policy tools for overcoming the limitations encountered by emerging nations, and it has been suggested as one of the components of the framework for identifying and facilitating growth. As stated by Lin (2012), "In developing countries with poor infrastructure and unfriendly business environment, the government can invest in industrial parks or export processing zones and make the necessary improvements to attract domestic private firms and/or foreign firms that may be willing to invest in the targeted industries" (p. 162).

Four broad policy reasons are suggested for the development of SEZs in developing countries: to support a wider economic reform strategy; to serve as "pressure valves" to alleviate growing unemployment; as experimental laboratories for the application of new policies and approaches; and to attract foreign direct investment (FIAS, 2008). Through the creation of economic zones that support economic growth and transformation, China and other countries have effectively achieved these policy goals.

According to FIAS (2008) and Farole (2011), economic zone benefits can be classified into two categories: static benefits and dynamic benefits. Static benefits of economic zones are gained in a relatively short period. Job creation, export earnings, and FDI attraction are the main static benefits

expected from the economic zones. The dynamic economic benefits (expected in the longer term) of the industrial parks include spillover effects on local economy, technology transfers, and fostering economic transformation.

### *2.3 Empirical Literature on the Effects of Industrial Parks*

#### **Export Earning**

One of the key advantages of economic zones that is anticipated to be realized in a very short period is export earnings. Using firm-level data from Africa and Asia, Davies and Mazhikeyev (2015) assess the effect of operating in an economic zone on a firm's likelihood of exporting, export intensity, and export value. At the extensive margin, the authors find that SEZ enterprises in open economies are 25% more likely to export compared with their non-SEZ counterparts. At the intensive margin, they find that SEZs raise export value, but only in nations that impose import tariffs, where the predicted gain is 3.6%.

The export effectiveness of Science and Technology Industrial Parks (STIPs) and Economic and Technological Development Zones (ETDZs) was examined by Schminke and Van Biesebeek (2013). The authors found that because of the increased trade and the increased number of destinations, businesses operating in an ETDZ gain substantially greater export values, and firms operating in a STIP perform better on quality indicators.

Johansen and Nilsson (1997) find mixed results regarding the impact of export processing zones on exports by exploring the experiences in Asia. The results of their study indicate that SEZs are more likely to have stronger export-generating outcomes in countries that adopt export-oriented national policies. Consequently, they concluded that the catalyst effect of foreign affiliate firms on local firms is potentially an important indirect effect of export processing zones. More specifically, their findings indicate a significant catalyst effect of the export processing zone in Malaysia.

#### **Employment/Job Creation**

One of the most significant contributions expected from economic zones, especially in low-income countries, is job generation (Madani, 1999). However, there are divergent findings regarding the effects of economic zones on job creation (World Bank, 2017). In Asian countries, SEZs appear to have had a mixed record in terms of creating jobs (Amirahmadi & Wu, 1995). For instance, Lu et al. (2015) examine the short-term effects of Economic Zones on the economic activity of the targeted areas using two geo-coded comprehensive waves of Chinese firm censuses by constructing a panel dataset for areas before and after the zone establishment, and they find that the employment, output, and capital of the targeted area are positively impacted by the economic zones. On the contrary, Cirera et al. (2014) indicate that there is no evidence that EPZs generate additional employment in the regions in which they are based. The SEZs may not have a major impact on employment patterns in India (Shah, 2009).

#### **FDI Attraction**

Attracting FDI is one of the main goals of establishing economic zones in developing nations.

Numerous studies have confirmed the positive effects of economic zones on FDI. Using the statistical techniques of Spearman rank correlation and Pearson correlation, Doroyk et al. (2017) find statistically significant positive relationships between FDI inflow to SEZs and coefficients that describe the attractiveness of both collective and partial. Song et al. (2020) empirically examined the impact and mechanism of SEZs on foreign investment and found that the establishment of SEZs significantly fosters foreign entry. Moreover, Theot (2022) applied Generalized Methods of Moments (GMM) to panel data constructed from 19 Cambodian provinces during 2015-2019 and found the number of SEZs positively affects FDI inflow. The effects of SEZs on FDI inflow among Indian states were examined by Chakraborty et al. (2017) by utilizing panel data techniques on 16 groups of states over 14 years from 2001 to 2014. The findings show the adoption of SEZ policies and the operation of SEZs in the states contributed to greater FDI inflow.

### 3. Methodology

An original firm-level survey was conducted through a structured questionnaire from the textile and leather-related manufacturing firms located both inside and outside the industrial parks in Ethiopia. The data was collected from 54 manufacturing firms i.e., 27 operating in the industrial parks and 27 operating outside the parks. The sample manufacturing firms are selected through the purposive sampling method. Three industrial parks namely Bole Lemi, Hawassa, and Eastern industrial parks which are relatively older establishments have been selected as the case study. Nine textile and leather manufacturing firms from each of the three parks have been selected as a sample. Interviews have been conducted with the managers of the industrial parks and manufacturing firms and with employees of the firms.

The study uses mixed research methods (quantitative and qualitative). Inferential statistics analysis has been conducted. Hypothesis 1 (the effects of industrial parks on export) and Hypothesis 2 (the effects of industrial parks on employment) have a continuous dependent variable and categorical independent variable for each so an Independent T-test analysis is used to test the hypotheses. Hypothesis 3 (the effects of industrial parks on FDI) has a categorical dependent variable and categorical independent variable and a Chi-square test is conducted. IBM SPSS has been used as a data analysis tool.

Based on the existing theories and empirical studies, the researchable hypotheses are formulated to examine the effects of industrial parks on export earnings, employment creation and FDI attraction in Ethiopia. Three directional hypotheses are formulated and the null hypothesis to be tested and the alternative hypothesis which is the prediction of the study are designed for each hypothesis as follows.

#### **Hypotheses 1: *The Effects of Industrial Parks on Export Earnings***

##### ***Null Hypothesis***

(Ho)- The manufacturing firms operating outside the industrial parks (Outside IP) have equal or greater

export performance than those operating inside the parks (Inside IP)

$\mu$  Export Outside IP  $\geq$   $\mu$  Export Inside IP

**Alternative Hypothesis**

(H<sub>a</sub>)- Manufacturing firms operating in the industrial parks (Inside IP) have significant effect on export performance than those operating outside the parks (Outside IP)

**Hypotheses 2: The Effects of Industrial Parks on Employment Creation**

**Null Hypothesis**

(H<sub>0</sub>)- The manufacturing firms operating outside the industrial parks (Outside IP) have equal or greater employment performance than those operating inside the parks (Inside IP)

$\mu$  Employment Outside IP  $\geq$   $\mu$  Employment Inside IP

**Alternative Hypothesis**

(H<sub>a</sub>)- Manufacturing firms operating in the industrial parks (Inside IP) have significant effect on employment performance than those operating outside the parks (Outside IP)

**Hypothesis 3- The Effects of Industrial Parks on FDI Attraction**

**Null Hypothesis** (H<sub>0</sub>)- The number of manufacturing firms operating outside the industrial parks (Outside IP) owned by foreigners is equal or greater than those operating inside the parks (Inside IP)

$\mu$  Foreign ownership Outside IP  $\geq$   $\mu$  Foreign Ownership Inside IP

**Alternative Hypothesis**

(H<sub>a</sub>)- Manufacturing firms operating in the industrial parks are likely to be owned significantly by foreigners than those operating outside the parks

**Table 1. Variables and Measurements**

Hypothesis	Dependent Variable	Measurement	Independent Variable	Measurement
<b>1. The Effects of Industrial Parks on Export Earnings</b>	Export	the percentage of export as a share of total annual sale of the firm	Industrial Parks	Location of the firms: Inside / Outside industrial parks (IP) (Inside IP- with the value 1 Outside IP- with 0 value)
<b>2. The Effects of Industrial Parks on Employment Creation</b>	Employment	Number of Employees of the firm	Industrial Parks	Location of the firms: Inside / Outside industrial parks (IP) (Inside IP-

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<b>3. The Effects of Industrial on FDI Attraction</b>	Dummy FDI	Foreign/ Domestic ownership of the firm (foreign-1 Domestic- 0)	Industrial Parks	with the value 1
				Outside IP- with 0 value)
				Location of the firms: Inside / Outside industrial parks (IP) (Inside IP- with the value 1 Outside IP- with 0 value)

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#### 4. Empirical Results and Discussion

As it is discussed in the literature review section, there are theoretical and empirical studies that justify the effects of industrial parks on export earnings, employment creation, and FDI attraction. The main justification to use industrial parks as a policy tool in developing countries is that since the industrial parks provide better infrastructure like electric power, water supply, sewerage system, and one-stop-shop government services, firms operating in the parks are more likely to be competitive than those operating outside the parks. Accordingly, this study has designed three possible hypotheses and has conducted the test using proper statistical tools. The results and the discussions are presented here under.

##### Hypothesis 1: The Effects of Industrial Parks on Export Earnings

**Table 2. Group Statistics—Industrial Parks and Export**

	<b>Industrial Parks</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
<b>Export</b>	Inside IP	27	92.96	4.128	.794
	Outside IP	27	39.78	4.774	.919

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Table 2 shows the descriptive comparison of the sample manufacturing firms operating inside industrial parks (Inside IP) and outside of the industrial parks (Outside IP). The mean of export as a share of total annual sale of the firms Inside IP and Outside IP is 92.96 percent and 39.78 percent respectively. The standard deviation of the Inside IP group is 4.128 and Outside IP is 4.774. The descriptive analysis is, therefore, roughly shows that the manufacturing firms operating in the industrial parks perform better than those operating outside the parks with the mean difference of 53.18 percent.

**Table 3. Independent Sample test- Industrial Parks and Export**

		<b>Levene's Test</b>		<b>t-test for Equality of Means</b>		<b>95% Confidence</b>				
		<b>for Equality of</b>								
		<b>Variances</b>				<b>Significance</b>	<b>Mean</b>	<b>Std. Error</b>	<b>Interval df</b>	
		<b>F</b>	<b>Sig.</b>	<b>T</b>	<b>Df</b>	<b>One-Sided p</b>	<b>Difference</b>	<b>Difference</b>	<b>Lower</b>	<b>Upper</b>
Export	Equal variances assumed	.279	.599	43.788	52	<.001	53.185	1.215	50.748	55.62
	Equal variances not assumed			43.788	50.936	<.001	53.185	1.215	50.747	55.624

Table 3 provides the SPSS output of the Independent T-test on the effects of industrial parks on export earnings. One of the assumptions of independent sample test analysis is the homogeneity of the variance. The assumption states that the population variance for each group of the independent variable is the same. Levene's test shows the F- test is .279 with a significance (p) level of .599. There are two ways of Levene's test. The first one is to use the upper row if the F-test significance value is greater than 0.05. The second is to use the lower row if the significant value is less than 0.05. In our case, we use the upper row to proceed because Levene's test didn't reject the null hypothesis of equal variances between the two groups (Inside IP and Outside IP) of the F-test.

Thus, the test in the upper row shows that the value of t is 43.788 and the degree of freedom (df) is 52. The t-test for equality of means shows the mean difference between the two groups (Inside IP and Outside IP) is 53.185 % of export performance. The significance (p) level for t-statistics is <.001 (in a One-Sided or unidirectional hypothesis). As a result, the null hypothesis which assumed equal means of the two groups of the independent variable (Inside IP and Outside IP) is rejected.

In conclusion, the Mean test scores were higher in the manufacturing firms operating in industrial parks (Inside IP) (N=27, M=92.96, SD=4.128) than in firms operating outside the industrial parks (Outside IP) (N=27, M=39.78, SD=4.774). Levene's test didn't reject the null hypothesis of equal variances between the two groups (F=0.279, p .559), and the upper row (equal variance assumed) of the independent samples t-test is used. The result of the analysis confirmed that the mean difference of Inside IP and Outside IP (53.185) was statistically significant,  $t(52) = 43.788, p = <.001$  (One-Tailed P).

### **Hypothesis 2: The Effects of Industrial Park on Employment Creation**

**Table 4. Group Statistics—Industrial Parks and Employment**

	Industrial Parks	N	Mean	Std. Deviation	Std. Error Mean
<b>Employment</b>	Inside IP	27	757.56	162.611	31.294
	Outside IP	27	287.93	95.221	18.325

Table 4 illustrates the group statistics on the employment creation performance of manufacturing firms operating inside industrial parks (Inside IP) and outside of the industrial parks (Outside IP). The mean of Inside IP and Outside IP is 757.56 percent and 283.93 percent respectively. The standard deviation of the Inside IP group is 162.611 and Outside IP is 95.221. The result roughly shows that the manufacturing firms operating in the industrial parks perform better than those operating outside the parks.

**Table 5. Independent Sample Test—Industrial Parks and Employment**

Levene's Test for Equality of Variances    t-test for Equality of Means									
					95% Confidence Interval of the Difference				
					Significance One-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
	F	Sig.	T	Df					
Employment	Equal variances assumed	8.860	.004	12.950	52	<.001	469.63	36.265	396.858 542.40
	Equal variances not assumed			12.950	41.955	<.001	469.63	36.265	396.441 542.81

Table 5 provides the SPSS output of the Independent T-test on the effects of industrial parks on employment creation. One of the assumptions of independent sample test analysis is the homogeneity of the variance. The assumption states that the population variance for each group of the independent variable is the same. Levene's test result shows the F- test is 8.860 with a significance (p) level of .004. In this case, we can't use the upper row (Equal variances assumed) to proceed with the analyses due to Levene's test didn't reject the null hypothesis of equal variances between the two groups (Inside IP and Outside IP) of the F-test.

The test in the bottom row shows that the value of t is 12.950 and the degree of freedom (df) is 41.955. The t-test for equality of means shows the mean difference between the two groups (Inside IP and

Outside IP) is 469.630. The significance (p) level for t-statistics is  $<.001$  (in a One-Sided or unidirectional hypothesis). As a result, the null hypothesis which assumed equal means of the two groups of the independent variable (Inside IP and Outside IP is rejected by using equal variances not assumed analysis option.

In conclusion, the Mean test scores were higher in the manufacturing firms operating in industrial parks (Inside IP) ( $N=27$ ,  $M=92.96$ ,  $SD=4.128$ ) than in firms operating outside the industrial parks (Outside IP) ( $N=27$ ,  $M=39.78$ ,  $SD=4.774$ ). Since Levene's test rejected the null hypothesis of equal variances between the two groups ( $F=8.860$ ,  $p=.004$ ) and the bottom row (equal variance not assumed) of the independent samples t-test is used. The t-test for equality of means results confirmed that the means difference of Inside IP and Outside IP (469.630) was statistically significant,  $t(41.955) = 12.95$ ,  $p=<.001$  (One-Tailed P).

### Hypotheses 3: The Effects of Industrial Parks on FDI Attraction

**Table 6. Crosstabulation Industrial Parks and FDI**

FDI * Industrial Parks Crosstabulation					
			Industrial Parks		Total
			Outside IP	Inside IP	
FDI	Domestic	Count	15	1	16
		Expected Count	8.0	8.0	16.0
	Foreign	Count	12	26	38
		Expected Count	19.0	19.0	38.0
Total	Count	27	27	54	
	Expected Count	27.0	27.0	54.0	

As it is presented in table 6, the total number of manufacturing firms (N) of the sample is 54 (27 firms Outside IP and 27 firms Inside IP). The 26 (96%) firms and 1 firm (4%) Inside IP are owned by foreigners respectively. Among the 27 of firms Outside IP, 15 firms (55.5%) domestic owned and 12 firms (44.5%) are owned by foreigners.

**Table 7. Chi-Square Tests—Industrial Parks and FDI****Chi-Square Tests**

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probabilit y
Pearson Chi-Square	17.408 <sup>a</sup>	1	<.001	<.001	<.001	
Continuity Correction <sup>b</sup>	15.010	1	<.001			
Likelihood Ratio	19.981	1	<.001	<.001	<.001	
Fisher's Exact Test				<.001	<.001	
Linear-by-Linear	17.086 <sup>c</sup>	1	<.001	<.001	<.001	.000
Association						
N of Valid Cases	54					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.00.

b. Computed only for a 2x2 table

c. The standardized statistic is 4.133.

Table 7 depicts that Pearson Chi-Square statistic,  $\chi^2 = 17.408$ , and  $p < 0.001$  in 1- sided; i.e., the null hypothesis of there is no difference on foreign ownership between the manufacturing firms operating in industrial parks (Inside IP) and outside the parks (Outside IP).

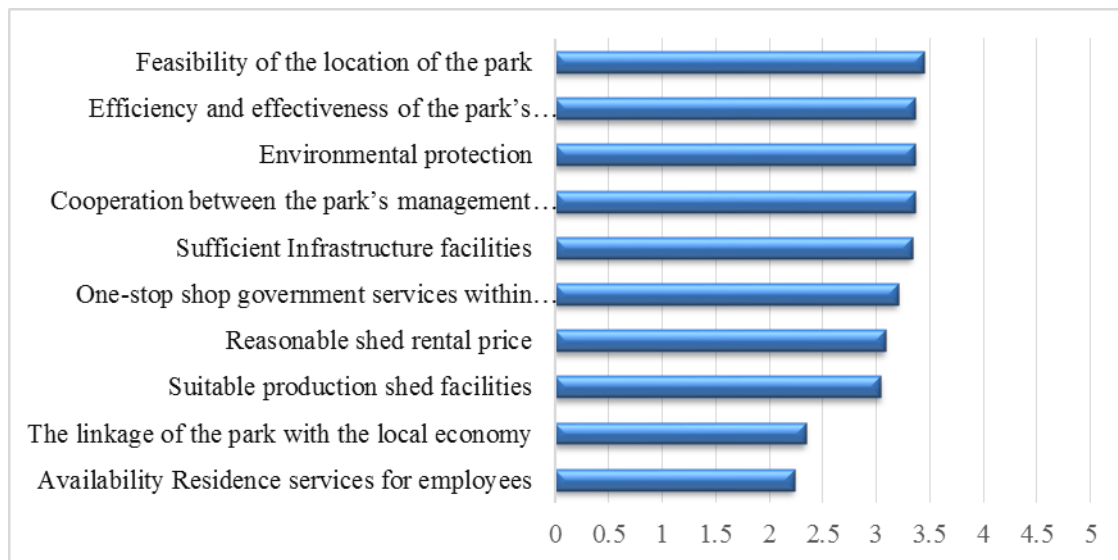
The result shows that industrial parks have significant effect in FDI attraction with significant level ( $p < 0.001$ ). As the crosstabulation output shows 96 percent of the surveyed manufacturing firms located inside the industrial parks are owned by foreigners, and only 44 percent of the manufacturing firms are owned by foreigners (Table 5).

### 5. Binding Constraints, Potentials and Opportunities Analysis

The second objective of this study is to assess the binding constraints, potentials, and opportunities that affect industrial park development in Ethiopia. The data was gathered through questionnaires and interviews with the management and employees of manufacturing firms and industrial parks to understand the performance, the binding constraints, and the potentials and opportunities that determine the effectiveness of industrial parks development as a policy tool in fostering industrialization.

The managers of the manufacturing firms operating in the industrial parks were asked to rank the performance of the industrial parks with the selected variables in five points of the linker scale. Figure 1 shows the mean of the ten variables in descending order which ranges from 3.44 (the highest) to 2.23 (the least). Feasibility of the park's location, efficiency and effectiveness of parks' management, environment protection, and cooperation between the parks and the firm's management is ranked top.

Whereas, availability of the employees' residence services (ranked below average with 2.23 mean) and the linkage with the local economy are the least ranked factors by the respondents. Sufficient infrastructure facilities, one-stop-shop services, suitable shed facilities, and reasonable shed rental prices are ranked at the medium level. The average mean result of the ten variables is 3.07 and it indicates that the overall performance of the parks is 70 percent.



**Figure 1. Industrial Parks Performance**

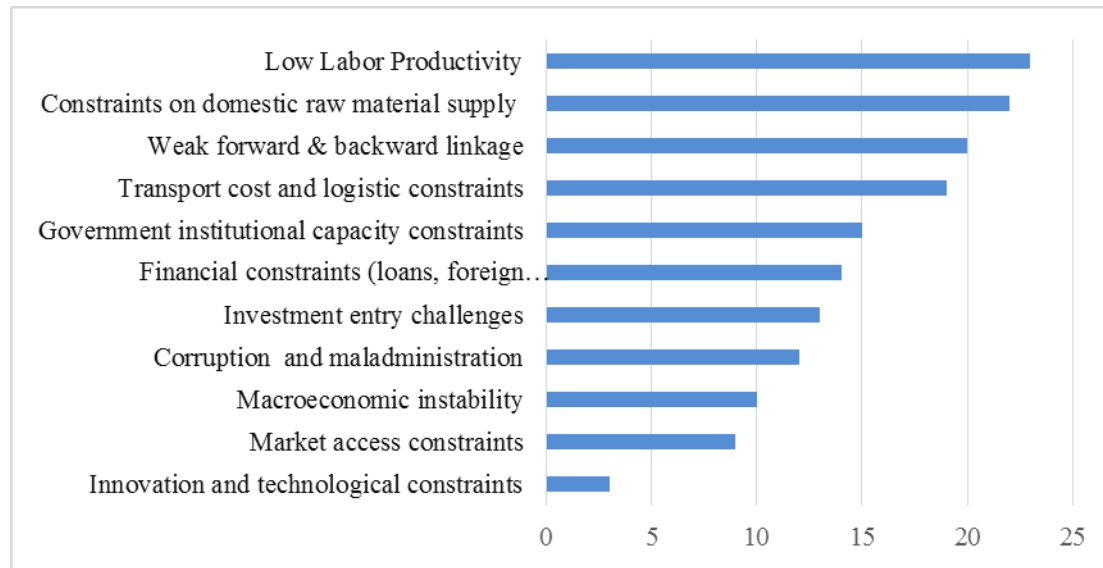
Source: Own Survey

### 5.1 Binding Constraints

The rationale behind the establishment of industrial parks is to overcome the infrastructure and business environment constraints that hinder industrialization in developing countries. The Ethiopian government's industrial parks development policy initiative is in line with this rationale. As it is presented in section three of this study, the policy initiative has registered positive and significant static outcomes in foreign export earning, employment creation, and FDI attraction. However, the industrial park development has not yet registered the expected dynamic outcomes such as spillover effects on the local economy and fostering structural transformation from low-productivity sectors to high-productivity sectors. The contribution of the manufacturing industry to the GDP of the country is less than 4.6 percent in the year 2021 (World Bank, 2022). Thus, understanding the binding constraints that affect negatively the effectiveness of the manufacturing firms operating parks is vital to suggest the possible policy implications.

The surveyed manufacturing firms (operating in the industrial parks) were asked to select the major constraints that affect their performance. As it is shown in Figure 2, low labor productivity, raw

material supply constraints, weak forward and backward linkage, transport cost and logistic constraints, and government institutions' capacity constraints are ranked as the five major binding constraints that affect the effectiveness of the manufacturing firms.



**Figure 2. Major Constraints**

*Source:* Own survey

Labor productivity is one of the necessary factors that determine the effectiveness of manufacturing firms. Although Ethiopia is a labor-endowed country, low labor productivity is one of the economic development challenges. The Manufacturing firms operating in the industrial parks were requested to identify the factors that affect their human resource performance. They identified employee turnover, unavailability of skilled labor, and weak industrial working culture are ranked as the three main constraints that affect the effectiveness of the manufacturing firms' labor productivity. From the employees' side, the interviewees complained about the low salary and benefits paid by the manufacturing firms and unavailability of employees' resident service in the industrial parks.

Regardless of the country's huge potential, the supply of domestic raw materials for textile and leather industries has continued to be a critical problem. Shortage of domestic raw material supply, poor quality of domestic inputs/raw materials, and unavailability of locally produced raw materials are the three major reasons that forced the surveyed manufacturing firms to use imported raw materials.

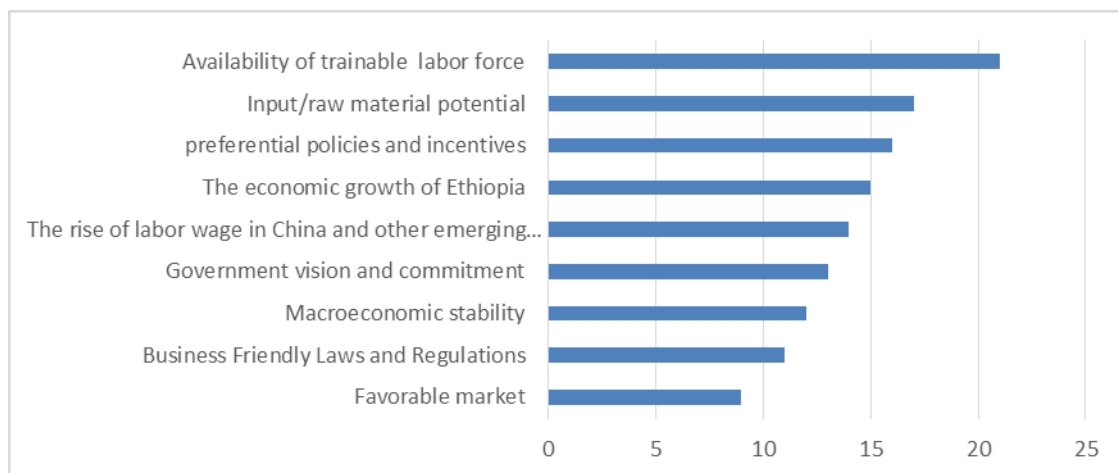
Ethiopia is a landlocked country, and transport costs from and to the ports and inefficient port logistic services are among the challenges that affect the import and export. The managers of the manufacturing firms and industrial parks who are interviewed stated that the poor quality of road transport, insufficient and inefficient railway transport, and inefficient logistic system need to be improved to foster

industrialization in Ethiopia.

The institutional capacity of government institutions responsible for the regulation and service provisions is vital to enhance industrialization. Different government institutions are involved in the regulatory and service provision of the manufacturing industry. The surveyed manufacturing firms identified foreign currency supply, bank loans, telecommunication, water, and electricity services are the weak performance of the public institutions. The interviewees appreciated the efforts of the government to improve the investment climate. However, they explained their concerns about the institutional capacity constraints of the government institutions in formulating business-friendly policies and in providing prompt services. They complained about awareness, commitment, and problem-solving capacity gaps among government officials and employees. In addition, consultation and cooperation between the government institutions and the private sector are not guided by clear policies and strategies.

### 5.2 Potentials and Opportunities

Most of the constraints discussed in the previous section are directly or indirectly linked with implementation aspects and institutional capacities in utilizing and upgrading the factor endowments that the country possesses. In this section, the major opportunities for the effectiveness of the industrial parks development to enhance the industrialization process of the country are briefly discussed.



**Figure 3. Potentials and Opportunities**

Source: Own Survey

The surveyed manufacturing firms were asked to select the major opportunities to foster industrialization in Ethiopia. As Figure 3 depicts, the availability of trainable and low-wage labor, domestic raw material potential, preferential policies, and investment incentives, the economic growth of the country and labor-wage rise in China and other emerging countries are ranked as the top five

major opportunities in fostering industrialization in Ethiopia.

Ethiopia is the second most populous country in Africa next to Nigeria and 12th among the countries in the world and the total population is estimated at 114,963,588 in 2020 (United Nations Population Division 2022). As the World Bank (2022) data shows 40 percent and 56 percent of the total population is in the age categories of 0-14 years and 15-64 years respectively. According to the Ethiopian Ministry of Education, 26.6 million students are enrolled from pre-primary to secondary levels in the year 2022. This shows that Ethiopia has a young and trainable labor force potential. Concerning the share of employment in economic sectors, agriculture constitutes 63.5%, service constitutes 30.2%, and industry constitutes 6.3% in the year 2021 (ILO, 2022). Most of the labor force of the country is engaged in low labor productivity sectors mainly in agriculture and service. The employment share of industry in general and the manufacturing sector in particular is very low. Labor wage is also currently low in Ethiopia when it is compared to other countries. On the other hand, unemployment has become a challenge in the country. According to the Ethiopian Central Statistics Agency survey, the rate of urban unemployment in Ethiopia increased to 19% in 2018 (Tesfaw, 2021). Thus, unlocking the labor potential of the country through robust government policies based on comparative advantage is paramount important. According to Tesfaw (2021), labor-intensive focused industrial policy is a feasible pathway at the current stage of the country, both a means and as an end for Ethiopia. He emphasized the country has to utilize its labor potential to sustain its rapid economic growth and transform its economy and the economy has to generate sufficient jobs for the highly growing labor force.

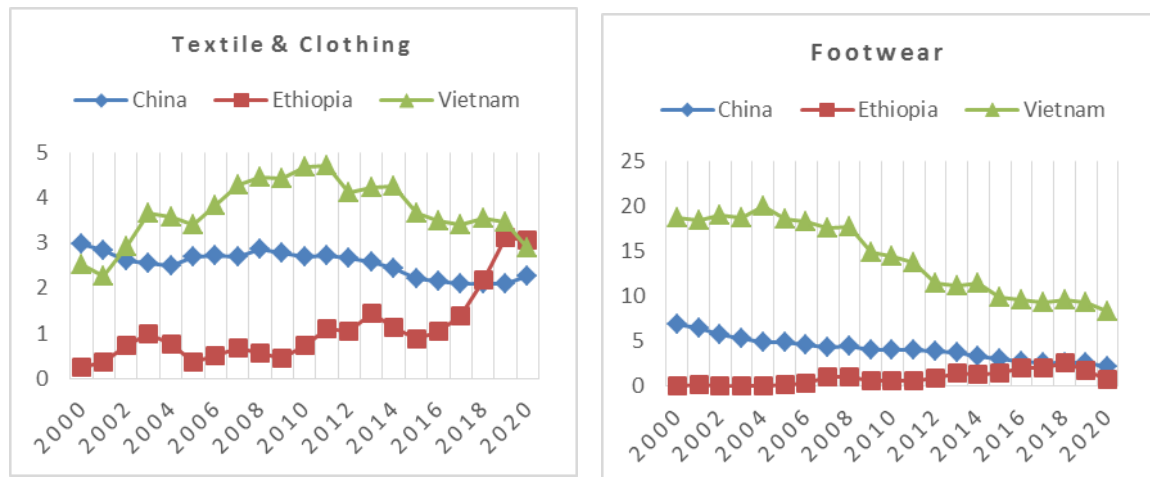
According to the Ethiopian Investment Commission (2022), Ethiopia is an incredible hub for investment because of its vast land, favorable climate, and water potential. 74.3 million hectares of the total land coverage of 111.5 million hectares are suitable for agriculture. The country is suitable among others for sugarcane, horticulture, floriculture, forestry, fiber crops, and animal husbandry. Eighteen major agroecological zones have been identified in the country, and over 3 million hectares of land have been made available for investment. Ethiopia has a huge potential for raw materials for the textile, leather, and, agro-processing industries. The country has a huge land potential suitable for the production of cotton. The land area suitable for cotton cultivation in Ethiopia is estimated at 3 million hectares, and less than 3 percent of the potential is presently under cotton cultivation. Ethiopia also has a huge raw material potential for leather manufacturing industries. The country is the first in Africa in livestock population. Above all, the country has the potential of quality sheep skin suitable for gloves, shoe uppers, and other leather products, and goat skins with high tensile strength (Tesfaw, 2021).

The Ethiopian government offers different investment incentive packages, particularly for priority sectors. Textile and apparel industries, leather and leather product industries, and agro-processing industries are among the priority sectors. The recently adopted Council of Ministers Investment

Incentive Regulation No. 517/2022 provides the types and the administrative procedures of investment incentives. Income tax exemption, export incentives, custom duty exemptions, loss carry forward, and remittance of capital are among the incentives provided for investors. Special facilities and incentives are offered to the industrial parks. Income tax exemption of 10-15 years and 8-10 years is offered for the industrial park developer and the enterprise located in the industrial park respectively. One-Stop Government Services such as processing & issuance of investment permits, Issuance of business licenses and work permits, issuance of tax identification numbers, issuance of customs duty exemptions, and customs clearance and banking services are provided within the industrial parks. Dedicated power sub-station, waste treatment facilities, commercial buildings, health stations, and fire brigades are among the facilities in the industrial parks.

Ethiopia has registered rapid economic growth since 2004. An average of 9.8 percent of GDP annual growth has been achieved from 1991-2021 (World Bank, 2022). The achieved economic growth has been accompanied by achievements that improve the livelihood of the people to some extent. The number of people living below the national poverty line declined from 47 percent in 1995 to 22 percent in 2016 (NPCE, 2018). Remarkable achievements have also been registered in providing access to education and health services and public infrastructure investments such as electric power, road, and railways. However, the structural transformation from high productivity to low productivity sectors. The agriculture sector has contributed 40.7 percent of an annual average value added to GDP from 1997-2021. The service sector industry (including construction) value added to GDP is an annual average of 38 percent and 14.6 percent respectively (in the same period). However, the contribution of the manufacturing sector was very low with the average of 5 percent annual average.

The labor wage rise trend in the emerging economies is one of the opportunities for the labor endowed low-income countries like Ethiopia. Lin (2012) states “as wages rise rapidly in dynamically growing emerging market economies, such as China, India, Brazil, Indonesia and others, in the multipolar growth world of the 21st century, the labor- intensive industries in those emerging market economies will be losing comparative advantages and provide golden opportunities for other low-income countries to enter (p. 8)”. The author further elaborates that only China has 85 million manufacturing workforces in labor-intensive industries in 2013 and low-income countries have an opportunity to seize these jobs and will be able to achieve dynamic economic growth. The current Reshoring Institute (2022) study on global wage rate comparisons indicates that “China has experienced a significant rise in average wages over the last decade, making companies realize that China may no longer be the cheapest and best alternative”. The wage rate in other emerging economies such as Brazil, Malesia, Vietnam has also increased.



**Figure 4. Revealed Comparative Advantage Comparisons (China, Vietnam and Ethiopia)**

Source: Own computing World Integrated Trade Solution (WITS) Data (2022)

Figure 4 provides the comparisons of the revealed comparative advantage of the sample labor-intensive manufacturing products export (textile & clothing and footwear) of China, Vietnam, and Ethiopia to show the trends. The trend indicates that the comparative advantage of China and Vietnam in labor-intensive manufacturing has declined, and Ethiopia's comparative advantage has shown an incremental trend in the last five years. In the textile and clothing industries, Ethiopia exceeds China in 2019 and 2020 and score equally with Vietnam in 2020. The revealed comparative advantage analysis on the footwear industry shows that China is losing its comparative advantage; Vietnam has still a comparative advantage in a declining trend; and Ethiopia's comparative advantage has increased slowly.

The wage rise in emerging economies is by and large a golden opportunity for Ethiopia. As it is discussed earlier Ethiopia is a labor-endowed country at its current stage of development with a trainable and low-wage labor force. Thus, the country has to utilize its labor-force potential and needs to take the emerging country's wage advantage to enhance its growth and transformation endeavors.

## 6. Conclusion and Policy Implications

Using industrial park and other forms of special economic zones as a development policy tool is one of the debatable issues among scholars and policymakers. The practical experiences of different countries also show mixed results with successes and failures. The existing studies on industrial park development in Ethiopia have gaps in showing the significant effects of industrial parks. Hence, this study aims to examine the effects of the industrial parks on export earnings, employment creation, and FDI attraction in Ethiopia. Furthermore, the study aims to identify the constraints, potentials, and opportunities for the industrial parks to serve as an effective policy tool to foster the growth and

transformation of the country.

As the theoretical and empirical studies show, static benefits such as export earnings, employment creation, and FDI attraction are expected from industrial park development in a relatively shorter period. Three testable hypotheses are formulated based on the existing theoretical and empirical studies. The data is gathered through original surveys from manufacturing firms operating both inside and outside industrial parks in Ethiopia. Using inferential statistics methods (t-test and chi-square test), the analysis of this study reveals that industrial parks in Ethiopia have statistically significant and positive effects on export earnings, employment creation, and FDI attraction with significant levels  $p = <.001$  (One-Tailed P). The result shows the industrial parks in Ethiopia are contributing to the economic development endeavors of the country in facilitating manufacturing goods for export, manufacturing job creation, and FDI attraction. Furthermore, the analysis revealed that low labor productivity, domestic raw material supply constraints, weak forward and backward linkage, transport cost and logistic constraints, and government institutions' capacity constraints are identified as the top five binding constraints that affect the effectiveness of industrial parks and manufacturing firms. On the other hand, the availability of a trainable labor force, raw material potential, preferential policies and incentives, the economic growth of the country, and the labor wage rise in China and other emerging countries are identified as the top five potentials and opportunities for the industrial parks to serve as a dynamic policy tool in fostering industrialization in Ethiopia. Hence, overcoming the binding constraints and unlocking the potential is critically important for industrial parks to achieve the intended long-term and dynamic benefits.

Based on the findings of this study, three policy implications are suggested. First, formulating and implementing specific and robust manufacturing labor force development policy and strategy is vital. Second, strengthening and facilitating the forward-backward linkage along the value chain is paramount important. Finally, institutional capacity building through learning by doing and public-private cooperation has to be strengthened.

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