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# WAGES AND COMPENSATION IN ETHIOPIA'S INDUSTRIAL PARKS: EVIDENCE FROM A FIRM SURVEY \*

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## EXECUTIVE SUMMARY

Jobs in exporting industries tend to pay higher wages than comparable jobs in firms focused on the domestic market. In Ethiopia, where the government has pursued an ambitious industrialization agenda, systematic data on wages in industrial parks has been scarce. This note provides an overview of worker compensation using novel firm-level data. The data shows that before the Coronavirus disease (COVID-19) pandemic, a majority of industrial park firms' base salary exceeded the cost of basic needs as measured by the local poverty line. When bonuses, overtime pay, incentive pay, and in-kind benefits are taken into account, the median monetary value of the total compensation package is roughly fourfold of the cost of basic needs. Nevertheless, there is significant variation in pay, both within and between industrial parks with 21 percent of the surveyed firms reporting a base pay below the local poverty line. Much of the variation can be explained by the different industries in which these firms operate. Although lack of reliable data on the broader labor market makes rigorous comparisons challenging, the survey data suggests that base pay in the industrial parks is comparable with pay in the labor markets surrounding the parks.

This note is part of the World Bank Group's analytical work program on *More, better, and more inclusive jobs: Preparing for successful industrialization in Ethiopia*, which is funded by the UK Foreign, Commonwealth & Development Office. This program aims to provide reliable and timely data that answers important questions on current employment, labor productivity, and wage dynamics in the industrial parks, and the broader impacts of industrial jobs on the local economy.

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# 1. INTRODUCTION

**Ethiopia has put vast resources into its industrialization drive over the past years.** In an effort to promote exports and job creation, the Government of Ethiopia (GoE) has invested significantly into enabling infrastructure and set up a series of special economic zones—industrial parks (IPs)—to encourage foreign direct investment (FDI) into the export-oriented manufacturing sector, with a particular focus on textiles and garments. These parks have had some success in creating jobs: Before the COVID-19 pandemic, 14 industrial parks across the country provided employment for about 88,000 workers. Beyond contributing to direct job creation, these industrial parks are expected to expand the industrial base of the country, transform the wider economy, and raise living standards of the population.

**Export industries are often seen as a vehicle to create jobs that pay more than those available in the local economy.** Evidence from various countries suggests that jobs in export industries tend to pay higher wages than comparable jobs in firms focused on the domestic market. Lopez-Acevedo et al. (2016) find that in several South Asian countries, even small wage premia in export industries may lead women to shift from small-scale agricultural work in their households to formal wage employment in manufacturing. Wage premia, along with better working conditions than in non-exporting firms, provide a strong rationale for promoting investments into the export-oriented manufacturing sector. Consequently, worker compensation represents an important yardstick to assess the success of broad-based industrialization strategies such as Ethiopia's. While the exporter wage premium has received considerable attention in academic and policy research, the data presented here will not be sufficient to rigorously assess whether exporting firms in Ethiopia pay more than comparable firms focused on the domestic market.<sup>1</sup>

**In Ethiopia, the lack of reliable data on pay in industrial parks has undermined the ability of stakeholders to assess progress.** Since the beginning of Ethiopia's ambitious industrialization agenda, the level and evolution of worker pay in industrial parks has been at the center of controversy. Anecdotal evidence has suggested that worker pay is low—both in absolute terms and relative to other jobs in the local economy. Comprehensive data on pay is limited and non-monetary compensation components such as free or subsidized food and transport are often overlooked altogether. Most analyses only focus on base pay and largely do not take into consideration bonuses as well as overtime and incentive pay, all of which are commonly used in export-oriented manufacturing.

**This note aims to fill this knowledge gap by providing an overview of the compensation level and structure of firms in Ethiopia's industrial parks.** The findings described in this note are based on a phone survey that covered almost 70 percent of all industrial park firms. The survey was conducted between May and August 2020. Firms from both public and private industrial parks were interviewed. The note summarizes in detail the monetary and non-monetary compensation that firms provide to workers. These compensation figures are put in perspective with the local poverty lines and outside options in the local labor market, both in agricultural and non-agricultural jobs.

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<sup>1</sup> While the survey data presented in this note is insufficient to rigorously assess wage differences between firms inside and outside of industrial parks (or exporters and non-exporters more generally), a large empirical literature in economics has established that export-oriented firms tend to pay higher wages even controlling for worker skills and firm size (Bernard and Jensen 1995, 1997; Bernard et al. 2007). Similarly, foreign direct investment firms tend to pay higher wages in comparison to domestic firms (Heyman et al. 2007; Javorcik 2014). In Ethiopia, there is limited evidence on wage premia for exporters generally and industrial parks specifically. This may partly be due to the lack of reliable data on employers and employees. Using a survey of nearly all Ethiopian manufacturers, Bigsten and Gebreyesus (2008) find that exporters pay 60 percent more than non-exporting manufacturers. This wage premium exists for both production and non-production workers. Van Biesebroeck (2005) also finds evidence for a wage premium for exporting manufacturers of 34 percent after controlling for firm size.

**The data shows that pay in industrial parks compares favorably to the local cost of basic needs, and is in line with pay in other sectors of the local economy.** The total value of compensation and pay structure vary considerably across the different industrial parks. Within industrial parks, there is a significant variation in pay across firms. Base pay at most industrial park firms exceeds the cost of basic needs in the nearby urban areas. Once variable pay and in-kind benefits are taken into account, the median monetary value of the total compensation package is roughly fourfold of the local cost of basic needs as measured by the local poverty line. Nevertheless, there is significant variation in pay both within and between industrial parks with 21 percent of the surveyed firms reporting a base pay below the local poverty line. Much of the variation can be explained by the different industries in which these firms operate. For example, firms which manufacture specialized goods, such as chemical products or electrical equipment pay more than those which manufacture garments. Although lack of data on the broader labor market makes rigorous comparisons challenging, the survey data suggests that base pay in the industrial parks is comparable with wages in the labor markets surrounding the parks.<sup>2</sup>

**The rest of this note is structured as follows:** The second section describes the survey design and sample. The third section reports the absolute levels of compensation as reported in the survey. The fourth section puts these findings in perspective with respect to cost of basic needs and labor markets in the catchment areas of the industrial parks. The fifth section concludes.

## 2. SURVEY DESIGN AND SAMPLE

**The data presented in this note is based on a phone survey that aimed to interview all operational industrial park firms.** The survey was administered in close collaboration with the Ethiopian Investment Commission (EIC).<sup>3</sup> As of May 2020, administrative data from the EIC indicated that there were 153 operational firms across Ethiopia's 14 industrial parks. This includes both parks managed by the Government's Industrial Parks Development Corporation (IPDC) as well as parks managed by private investors. The largest industrial parks are Eastern Industry Zone with 97 registered firms, Hawassa Industrial Park with 22 firms, and Bole Lemi Industrial Park with 10 firms.

**The survey reached 70 percent of eligible firms, almost all of which were operational at the time of the interview.**<sup>4</sup> Interviews were conducted over the phone by professional enumerators hired through a survey firm. Most respondents were human resources managers or firm executives. The survey reached firms in 11 out of 14 parks. In Hawassa Industrial Park and Bole Lemi Industrial Park, both cornerstones of the government's industrialization agenda, 91 and 90 percent of firms were surveyed, respectively.

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<sup>2</sup> Sectors were classified based on International Standard Industrial Classification (ISIC) (Revision 4) codes. Industry includes sections manufacturing (section C), construction (section F), mining and quarrying; electricity, gas and water supply (sections B, D, E). Services includes market (sections G, H, I, J, K, L, M, N) and non-market (O, P, Q, R, S, T, U) services. For an overview of sectoral classifications see <https://ilostat.ilo.org/resources/concepts-and-definitions/classification-economic-activities/> (last accessed November 13, 2020).

<sup>3</sup> The EIC was consulted in preparation of the survey and provided inputs into the design of the questionnaire. Firm outreach was done through EIC staff in each industrial park to ensure firms were informed about the objective and scope of the survey.

<sup>4</sup> The majority of the firms which were either not reached or refused to take part in the survey were concentrated in Eastern Industrial Park. A comparison of survey and government administrative data indicates that firms missing from the survey data are similar in size and the sector to the firms which took part in the survey. It is therefore unlikely that the firms omitted result in a significant sampling bias.

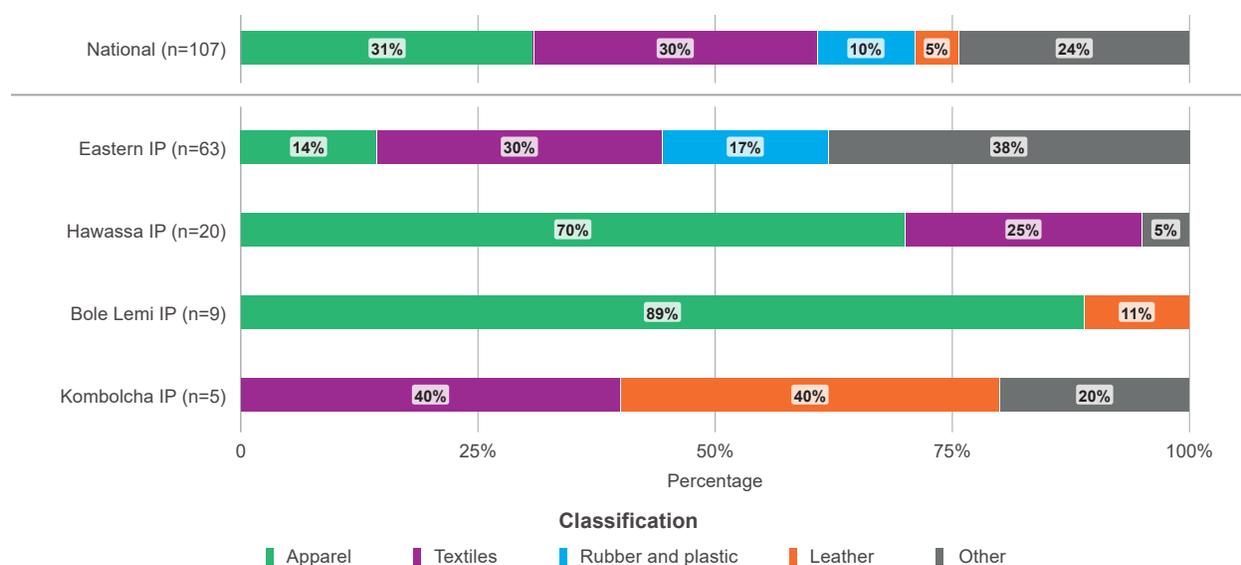
**TABLE 1: SAMPLE OVERVIEW, BY INDUSTRIAL PARK (NUMBER OF FIRMS)**

	Total	Eastern IP	Hawassa IP	Bole Lemi IP	Kombolcha IP	Other <sup>(a)</sup>
All eligible industrial park firms <sup>(b)</sup>	153	97	22	10	6	18
of which: Permanently closed due to COVID-19	1	0	0	0	0	1
of which: Not reached/refused	45	34	2	1	1	7
of which: Completed questionnaires	107	63	20	9	5	10

Notes: (a) Other industrial parks include: Adama Industrial Park, Bahir Dar Industrial Park, Debre Birhan Industrial Park, Dire Dawa Industrial Park, George Shoe Industrial Park, Mekelle Industrial Park, and Vogue/Velocity Industrial Park. (b) Firms which were ineligible, or permanently closed for reasons not related to COVID-19 were excluded from the sample. Reasons for ineligibility were the following: not yet started operations, only just started operations, or moving operations.

**The sampled firms are representative of Ethiopia’s industrial park firms: Most firms produce textiles or apparel, and the average firm has just under 600 employees.** However, there is significant heterogeneity among industrial parks in sectoral focus and market orientation. While publicly-owned industrial parks such as Hawassa and Bole Lemi are mostly focused on exports in the garment and textile industry, privately-owned industrial parks such as Eastern operate in the domestic market in a range of other sectors.<sup>5</sup> Firms operating in the garment and textile sector are significantly larger: The median textile and garment firm employs 159 and 951 workers respectively, while the median firm outside of the textile and garment sector only employs 107 workers. Figure 1 shows the industry breakdown for the full sample and selected industrial parks.

**FIGURE 1: INDUSTRY BREAKDOWN, BY INDUSTRIAL PARK**



<sup>5</sup> The most common other sectors in which industrial park firms operate are: manufacturing of rubber and plastic products (n = 11), manufacturing of food products (n = 4), and manufacturing of non-metallic mineral products (n = 4).

Throughout this note, data is only reported for industrial parks in which at least five firms were surveyed. This is done to ensure that no individual firms can be identified. For a more detailed overview of the survey design and sampling, as well further description of the nature of the firms, please refer to Mengistu et al. (2020).

**Data reported in this note focuses on the period before the Coronavirus disease (COVID-19) pandemic and cannot speak to potential changes in compensation during or after the economic crisis related to the pandemic.** The survey data reported here explicitly asked firm managers to provide data on compensation and management practices before the economic crisis related to COVID-19. The data cannot rule out that compensation practices may have temporarily or permanently shifted during or after the crisis.

**Industrial park firms tend to hire young female workers who have completed 10th grade education.** Working hours are similar across firms. The median firm in the sample has 206 employees, of which almost half are production workers such as sewing machine operators in the ready-made garment industry. On average, just under 80 percent of production workers are female. Most firms require workers to work eight hours a day spread over six days a week. While most firms in publicly owned industrial parks report no overtime hours, firms in privately-owned industrial parks report two hours of overtime on average each day.

**TABLE 2: AVERAGE NUMBER OF PRODUCTION WORKERS (“MACHINE OPERATORS”), EDUCATION AND TIME WORKED, BY INDUSTRIAL PARK**

	Full Sample	Eastern IP	Hawassa IP	Bole Lemi IP	Kombolcha IP
<b>Panel (a): Worker characteristics</b>					
Total employees	206	110	1,395	678	385
<i>of which:</i> Machine operators	92	51	747	613	302
<i>of which:</i> Percentage female operators	78	59	97	98	94
Operator education level	10 <sup>th</sup> grade	10 <sup>th</sup> grade	10 <sup>th</sup> grade	8 <sup>th</sup> grade	8 <sup>th</sup> grade
<b>Panel (b): Typical work arrangements</b>					
Days of work per week	6	6	6	6	6
Hours work per day	8	8	8	8	8
Overtime per day	1	2	0	0	0
N	106	63	20	9	5

Notes: The numbers reported in the table are median values within the relevant sample. Operator education level is reported as the modal value.

### 3. ABSOLUTE LEVELS OF WORKER COMPENSATION

**Three types of worker compensation are considered in this note: Base pay, variable pay, and non-monetary, in-kind benefits.**<sup>6</sup> Conceptually, the analysis presented in this note builds on the International Labor Organization's (ILO) (1998) definition of income related to paid employment, which consists of the payments, in cash, in kind or in services, which are received by individuals as a result of their involvement in paid jobs. These payments include total cash remuneration, including direct wages and salaries in cash for time worked and work done, including all incentive, shift and premium pay, and the monetary value of remuneration in kind and services such as food, drink, fuel, clothing, the imputed rental value of free or subsidized housing, etc. Because direct wages and variable pay are commonly used jointly for the compensation of production workers in manufacturing industries, this note will discuss overall compensation and its separate components. Survey questions to collect data on the base pay, variable pay, and non-monetary benefits closely follow the ILO's integrated system of wages statistics (ILO, 1979). Firm managers responding to the survey are asked to estimate the base and variable pay and in-kind benefits for a hypothetical production worker who performs their job at average productivity and who just started their job (i.e. have not advanced to a higher pay level because of their tenure). The monetary value of in-kind benefits is estimated based on the local market prices of comparable food, transport, and housing in the catchment area of each industrial park. Appendix Section A provides a detailed explanation of the valuation procedure.

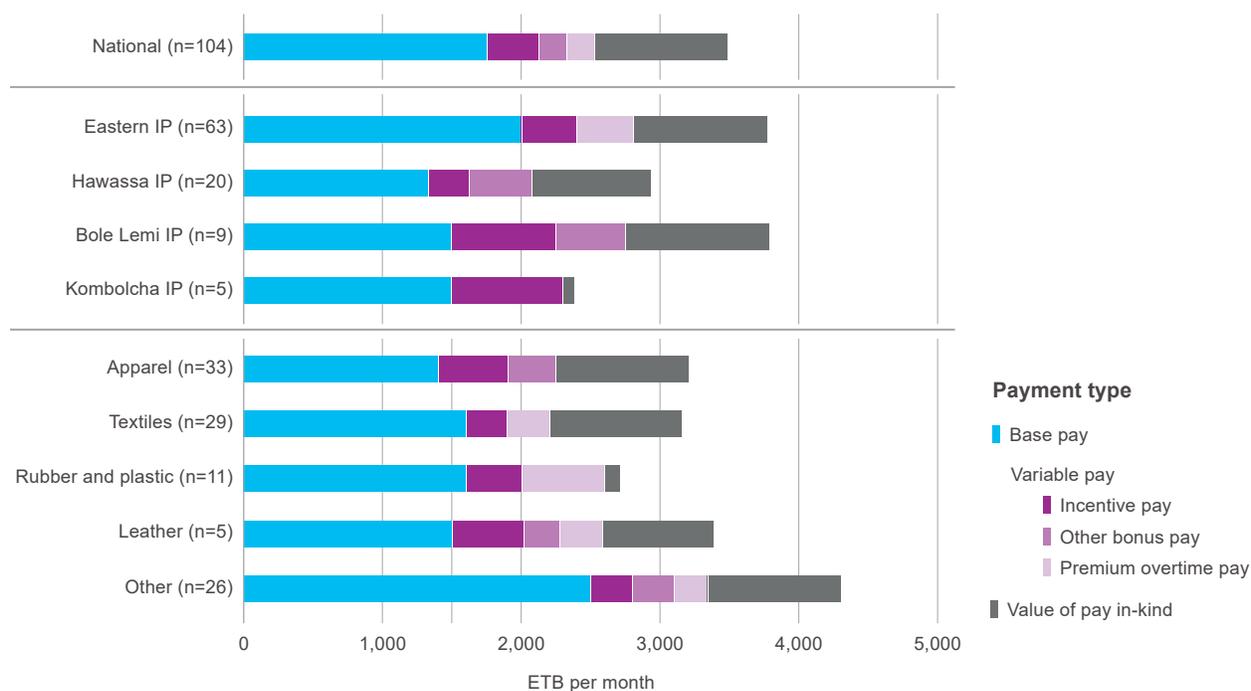
**The analysis indicates that the median industrial park production worker earns a base pay of 1,800 Ethiopian Birr (ETB) per month plus variable pay of 1,175 ETB.** This masks significant variation within and between industrial parks. Median base pay is the lowest in Hawassa Industrial Park and the highest in Eastern Industrial Park. Like with base pay, variable pay exhibits significant variation within and across industrial parks. Variable pay comprises of incentive pay, overtime pay, and any other bonus pay in monetary terms. At the 25th percentile, firms pay just below 700 ETB, while at the 75th percentile firms pay 2,100 in variable pay.

**Combining base and variable pay shows that the median industrial park firm pays nearly 3,000 ETB per month in monetary terms.** In publicly-owned industrial parks, these payments are smaller. For example, in Hawassa Industrial Park the median monetary payment is slightly more than 2,100 ETB, while in Bole Lemi Industrial Park and Kombolcha Industrial Park median monetary pay is 2,700 ETB. Firms in privately-owned parks are paying more (their base pay is 33 percent higher than publicly owned parks), with Eastern Industrial Park paying more than 3,400 ETB in monetary terms. Some of these differences may be driven by the fact that most firms in publicly-owned industrial parks are focused on garments and textiles, while firms in privately-owned industrial parks are focused on other sectors. Other sectors, such as production of chemicals and metallic products tend to require a higher level of skills and are thus likely to pay more than garment and textile production (Figure 2). In addition, the biggest privately-owned park, Eastern Industrial Park, has been operational for a significantly longer period than other industrial parks and might have, therefore, been able to retain a more productive and experienced workforce than other industrial parks.

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<sup>6</sup> Note that the analysis presented here primarily takes the perspective of earnings from a workers' point of view to measure the level of their purchasing power. Another, complementary perspective would be that of employers' expenditure towards the employment of its workforce. For example, one could calculate the cost of providing a free meal to workers in terms of cost to the employer, rather than measure it in terms of benefit to the employee.

**FIGURE 2: DETAILED PAYMENT COMPONENTS, BY INDUSTRIAL PARK AND INDUSTRY**



Notes: Each colored bar represents the median value of the associated payment type. Since the colored bars are stacked, the total value of each bar represents the sum of several median values. Note that this may be different to the median value of the sum of several payment types. As such, the total values of each bar may differ slightly from the median total compensation reported in Table 3.

**TABLE 3: OVERVIEW OF TOTAL COMPENSATION AND ITS COMPONENTS, BY INDUSTRIAL PARK**

	25th percentile	Median	75th percentile	(Sub-) Sample size
<b>Panel (a) Full sample</b>				
Base pay	1,100	1,800	2,500	105
Variable pay	688	1,175	2,100	104
In-kind benefits	243	957	1,629	106
Total compensation	3,100	4,063	5,289	104
<b>Panel (b) Eastern IP</b>				
Base pay	1,125	2,000	2,500	63
Variable pay	780	1,432	2,500	63
In-kind benefits	107	957	1,807	63
Total compensation	3,453	4,407	5,817	63

	25th percentile	Median	75th percentile	(Sub-) Sample size
<b>Panel (c) Hawassa IP</b>				
Base pay	998	1,325	1,800	20
Variable pay	603	814	1,225	20
In-kind benefits	727	859	1,425	20
Total compensation	2,665	3,148	4,443	20
<b>Panel (d) Bole Lemi IP</b>				
Base pay	1,200	1,500	1,800	9
Variable pay	1,026	1,200	1,340	9
In-kind benefits	72	1,035	1,035	9
Total compensation	2,612	3,772	4,435	9
<b>Panel (e) Kombolcha IP</b>				
Base pay	1,200	1,498	2,000	5
Variable pay	901	1,200	1,200	5
In-kind benefits	76	76	804	5
Total compensation	2,424	3,004	4,276	5

Notes: Base pay is the payment for normal working hours, variable pay comprises of incentive pay, overtime pay and other bonus pay. In-kind benefits comprise of the monetary valuation of food, transport, and housing benefits.

### BOX 1: COMPARING RESULTS TO WORKER SURVEYS AND GOVERNMENT ADMINISTRATIVE DATA

This note estimates the level and structure of worker compensation based on data reported by firm managers, which may raise concerns about systematic reporting biases. To assess this potential bias, the data presented here can be compared to worker-reported wages and government administrative data.

Using a survey of workers in 38 industrial park firms, ILO (2019) reports an average base pay of 1,697 ETB per month. This figure is close to the median wage of 1,800 ETB reported by the firms in the data presented here. It is important to note that the ILO survey was conducted one year before the data from this note was collected and so the small difference of 100 ETB might be explained by inflationary adjustments in pay.

Using a representative phone survey of more than 4,000 workers in Hawassa Industrial Park, Meyer et al. (2021) report a median base wage of 1,000 ETB, which is 325 ETB lower than the corresponding value from the firm-level data presented here.<sup>7</sup> Different survey instruments and systematic measurement error in both surveys may be driving this difference.

Finally, another useful robustness check comes from the administrative data of the Private Organizations Employees Social Security Agency (POESSA). POESSA administers a defined benefits pension scheme for private

<sup>7</sup> The median base wage is not reported in Meyer et al. (2021) but was shared by the authors in private correspondence.

sector firms that employ at least one worker. POESSA data provides information on worker base pay that can be matched to the survey data reported in this note. Coverage in the administrative data is only sufficient to report results for selected firms in Bole Lemi Industrial Park and Hawassa Industrial Park. Wages that are not reported for the most recent calendar year are inflated using GDP deflators to approximate what the wages would have been around the time of the sampling. Data from Hawassa Industrial Park suggests almost no difference in base pay between survey and administrative records, while data from Bole Lemi Industrial Park finds that base pay reported in POESSA is about 12 percent lower than in the survey (see Table A1).

**TABLE A1: BASE PAY COMPARISON BETWEEN POESSA AND FIRM SURVEY, BY INDUSTRIAL PARK**

	Median wage from POESSA	Median wage from survey	Raw difference	Percentage difference
Hawassa IP	1,014	1,000	14	1.4
Bole Lemi IP	1,319	1,500	-181	-12.1

**Free food and transportation are the most important types of in-kind benefits provided to workers.<sup>8</sup>**

72 percent of the surveyed firms reported that they provide full meals to their employees free of charge. Out of these firms, over 40 percent provide more than one meal per shift. Provision of transportation is another popular benefit, provided for free by 71 percent of surveyed firms. A few firms also provide food and transportation at subsidized rates. Very few firms offer free or subsidized housing, with only 6 percent providing housing free of charge and another 6 percent providing a housing subsidy.

**The monetary value of in-kind benefits is significant and adds up to nearly 1,000 ETB per worker per month for the median firm.<sup>9</sup>**

While these benefits for firms in Kombolcha Industrial Park add up to less than 100 ETB, the benefits in Bole Lemi Industrial Park are worth more than 1,000 ETB. These differences between industrial parks can be explained by a combination of degree of provision of these benefits (as shown in Figure 3), as well as local market price levels for food and transport. When looking at the distribution across firms, there is significant variation as well: At the 25th percentile, firms provide in-kind benefits worth just under 250 ETB while at the 75th percentile this is more than 1,600 ETB.

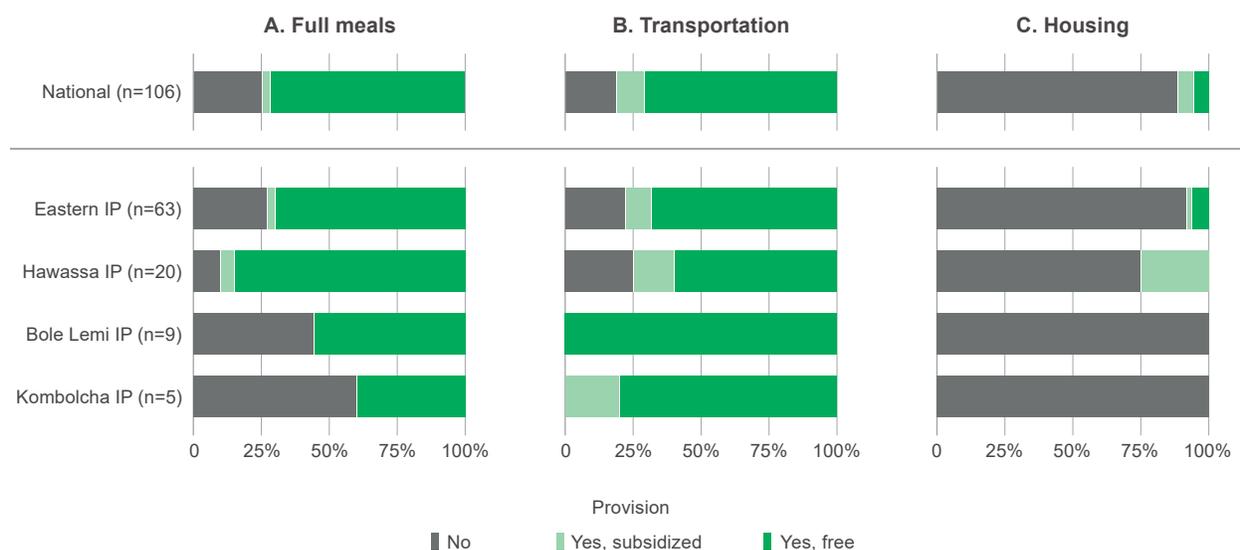
**When variable pay is further disaggregated, it shows significant variation in benefit packages across industrial parks.**

Figure 2 highlights significant variation across industrial parks as well as the fact that the aggregate of these components is much higher than the simple base pay in most industrial parks. This is particularly the case for Bole Lemi Industrial Park and Hawassa Industrial Park, and less the case for Kombolcha Industrial Park. Most of the variable pay can be attributed to incentive pay in most industrial parks, although firms in Bole Lemi Industrial Park and Hawassa Industrial Park also pay significant other bonuses. As most firms in publicly-owned industrial parks do not report to have employees work overtime,

<sup>8</sup> While the survey does not allow for verification of these benefits, evidence from other research indicates that workers are indeed receiving these non-monetary benefits (Dom et al., forthcoming).

<sup>9</sup> Appendix A describes the valuation procedure and its assumption in detail. The value of in-kind pay does not vary significantly in response to various assumptions of meal, transport, and house prices. Food prices have the biggest impact on the value of in-kind pay.

**FIGURE 3: IN-KIND BENEFITS, BY INDUSTRIAL PARK**



most do not pay premium overtime pay. Premium overtime payment is only paid by firms in Eastern Industrial Park as workers in the median Eastern Industrial Park firm work two hours of overtime each day (see Table 2).

**While the limited nature of the data collected in this survey does not allow for a comprehensive investigation of the underlying drivers of pay, industry type and average worker education explain much of the between-firm variation.** The small sample size of the data reported in this note does not permit rigorous analysis of the firm-level determinants of pay. Using a simple multivariate regression of pay on firm characteristics illustrates that the large heterogeneity in industries, both within and between industrial parks, is a key driver of pay and explains about one third of the variation in base pay (see Table 4). Pay also appears to rise with worker education, which itself also varies with industry. The bulk of the sampled firms report that their average worker has either an 8th, 10th, or 12th grade education, with these firms paying a median base pay of 1,550, 1,800 and 2,750 ETB per month, respectively.

**TABLE 4: DRIVERS OF PAY DIFFERENCES ACROSS FIRMS, BY PAYMENT TYPE (PROPORTION OF PAY VARIATION EXPLAINED)**

Explanatory Variables	Base pay	Variable pay	In-kind pay	Total pay
Industry classification	0.33	0.25	0.23	0.34
Industrial park	0.08	0.11	0.13	0.09
Average years of schooling for production workers	0.11	0.08	0.13	0.05
<b>All of the above</b>	<b>0.45</b>	<b>0.38</b>	<b>0.43</b>	<b>0.43</b>

Notes: This table reports variation in each pay component and total pay that is explained by the variables in the first column, measured by the  $R^2$  from a regression of base, variable, in kind, and total pay on a full set of industry classification dummies, industrial park, and education dummies both in isolation and in combination.

**Firms with a higher total compensation package tend to retain more of their employees annually.** A simple multivariate regression indicates that for every 100 ETB that a firm increases its total compensation package, annual retention of new hires increases by 0.35 percentage points (Table 5). Breaking down this effect by the components of pay, the base salary has almost zero effect while variable pay and in-kind pay drive this relationship. In particular, an increase in 100 ETB of variable pay results in an average increase of 0.6 percentage points in annual employee retention.

**TABLE 5: COMPENSATION AND WORKER RETENTION**

<b>Dependent variable: Percentage of workers retained for 12 months after hiring</b>		
<b>Explanatory Variables</b>	<b><math>\beta</math>/se</b>	<b><math>\beta</math>/se</b>
Intercept	31.117 (33.618)	34.187 (33.681)
Base pay in ETB (100's)		0.006 (0.182)
Variable pay in ETB (100's)		0.596** (0.236)
Pay in-kind in ETB (100's)		0.533 (0.392)
Total compensation in ETB (100's)	0.351*** (0.122)	
<b>Control variables:</b>		
Employee Education	Yes	Yes
Industrial Park	Yes	Yes
Industry Classification	Yes	Yes
N	104	104

Notes: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Standard errors are heteroskedasticity robust.

## 4. WAGES AND COMPENSATION IN PERSPECTIVE

**Comparing monetary and non-monetary compensation with the local cost of basic needs can provide an approximation of the standard of living of workers.** To understand the living standards of industrial park workers, compensation can be compared to the local cost of “basic needs” that workers face in terms of both food and non-food consumption. In Ethiopia, the cost of basic needs can be approximated by the official Government of Ethiopia poverty line (Government of Ethiopia, 2017).<sup>10</sup> This poverty line is adjusted for differences in prices over time and across regions. As a result, it is higher in areas with more expensive consumption goods (such as urban Addis Ababa), but lower in areas with cheaper consumption goods.<sup>11</sup> It should be noted that the poverty line represents a bare minimum standard of living. It is used here as an imperfect, minimum benchmark based on the GoE’s own cost of basic needs calculations, not as a level that is necessarily appropriate for labor earnings. It is different from the concept of a minimum “living wage” (ILO, 2008), which could be summarized as minimum wage that will provide a satisfactory standard of living to workers and their families (International Labor Conference, 2014). One challenge with establishing such a living wage is that there exists “neither a generally accepted definition of what a living wage is, nor is there a generally agreed methodology on how to measure a living wage” (Anker, 2011, page 1). Like the GoE poverty line, existing approaches to determine a “living wage” are often based on estimating the cost of basic need for workers. The GoE poverty line can thus be seen as a starting point for determining a living wage.

**Most industrial park firms provide compensation that exceeds the local cost of basic needs as measured by the local poverty line.** The median firm pays 1,800 ETB per month in base pay, which is significantly above the national poverty line of 987 ETB per adult equivalent per month (Figure 4).<sup>12</sup> However, it is important to note there are several firms that are not paying wages and compensation above the national poverty line. When looking at base pay alone, 21 percent of industrial park firms are paying below their local poverty line. In Hawassa and Bole Lemi industrial parks, 40 and 33 percent of firms are paying below the local poverty lines, respectively. However, when taking the full compensation package (including the monetary value of in-kind contributions) into account, there is not a single industrial park firm which is paying below the local poverty line. This highlights the importance of variable pay and in-kind benefits to total worker compensation.

**Pay in the broader labor market offers another important yardstick to assess compensation in industrial parks.** What are the outside options for industrial park workers in the local labor market? The analysis presented here considers three sectors: industrial jobs, service jobs, and agricultural work. While the first two are key alternatives in urban areas close to the industrial park, life in a rural agricultural household can be

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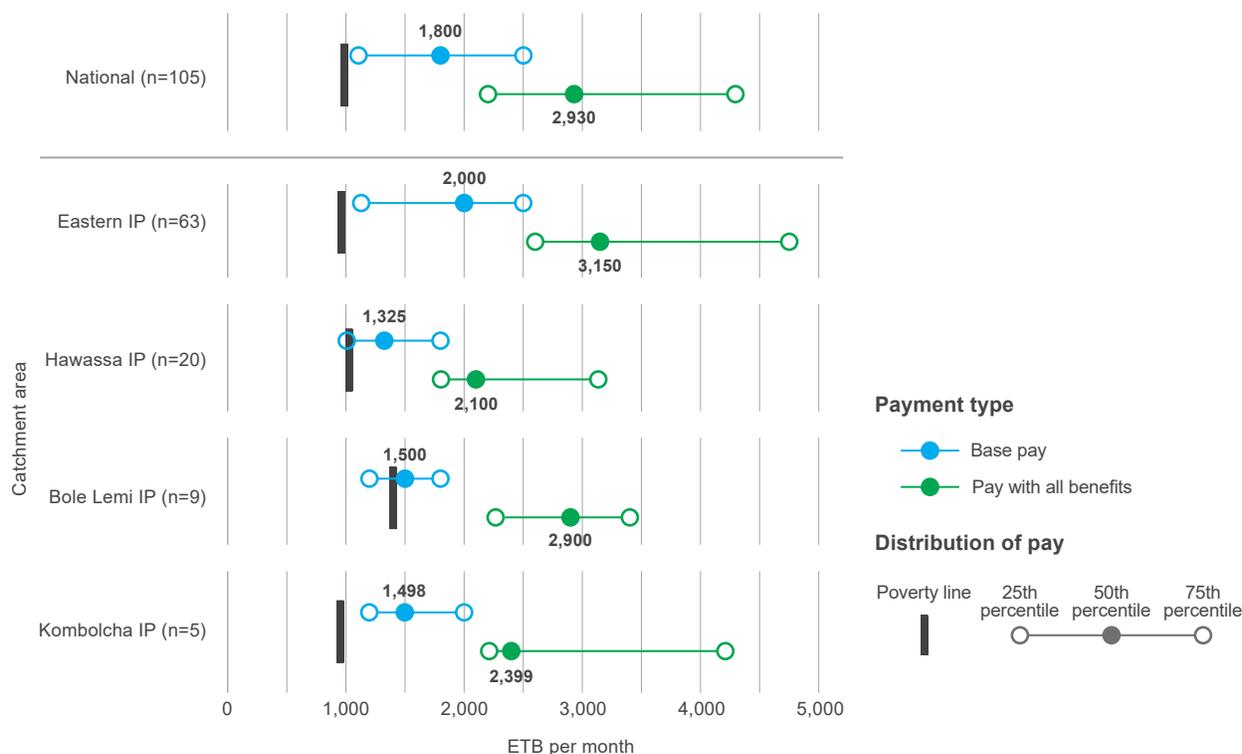
<sup>10</sup> Note that this local poverty line differs from the international poverty line that is used by the World Bank to measure extreme poverty across countries. It is set at \$1.90 a day at purchasing-power parity (PPP). PPP exchange rates are used to control for differences in prices across countries. In 2015/2016, the latest year reported by the World Bank, this international poverty line was equivalent to 522.26 ETB per person per month. That is slightly below the official government poverty line in the same year of 599 ETB per person equivalent per month.

<sup>11</sup> Price levels not only vary across regions within a country, but also across countries. Gelb et al. (2020) note that Ethiopia stands out in Sub-Saharan Africa as having relatively low general price levels as measured by the World Bank’s International Comparisons Program. On the basis of relatively low price levels and relatively low labor costs compared to other key comparator countries, they identify Ethiopia as potentially promising candidate for export-oriented light manufacturing.

<sup>12</sup> The calculations presented here assume that industrial park workers form their own households and so worker pay is not shared among several household members. Worker-level data presented in Meyer et al. (2021) finds that 9 percent of female workers are married or living with someone as if married. If income was shared by several household members or workers had to provide for several dependents, income would need to be adjusted in order to be more comparable to the poverty line, which is expressed in birr per adult equivalent. Such an adjustment would likely decrease the income figures reported here. The comparisons here also abstract from the important conceptual difference between income and consumption expenditures, which underlines the need to treat them as indicative only.

seen as the livelihood alternative that many industrial park workers are leaving behind.<sup>13</sup> Appendix Section C provides a detailed explanation of how the Ethiopian Socioeconomic Survey / Living Standards Measurement Survey (ESS / LSMS) 2018/19, which is the most recent available data, is used to calculate appropriate outside options in local labor markets.

**FIGURE 4: COMPARISON OF INDUSTRIAL PARK COMPENSATION WITH LOCAL COST OF BASIC NEEDS MEASURED BY THE LOCAL POVERTY LINE, BY INDUSTRIAL PARK**



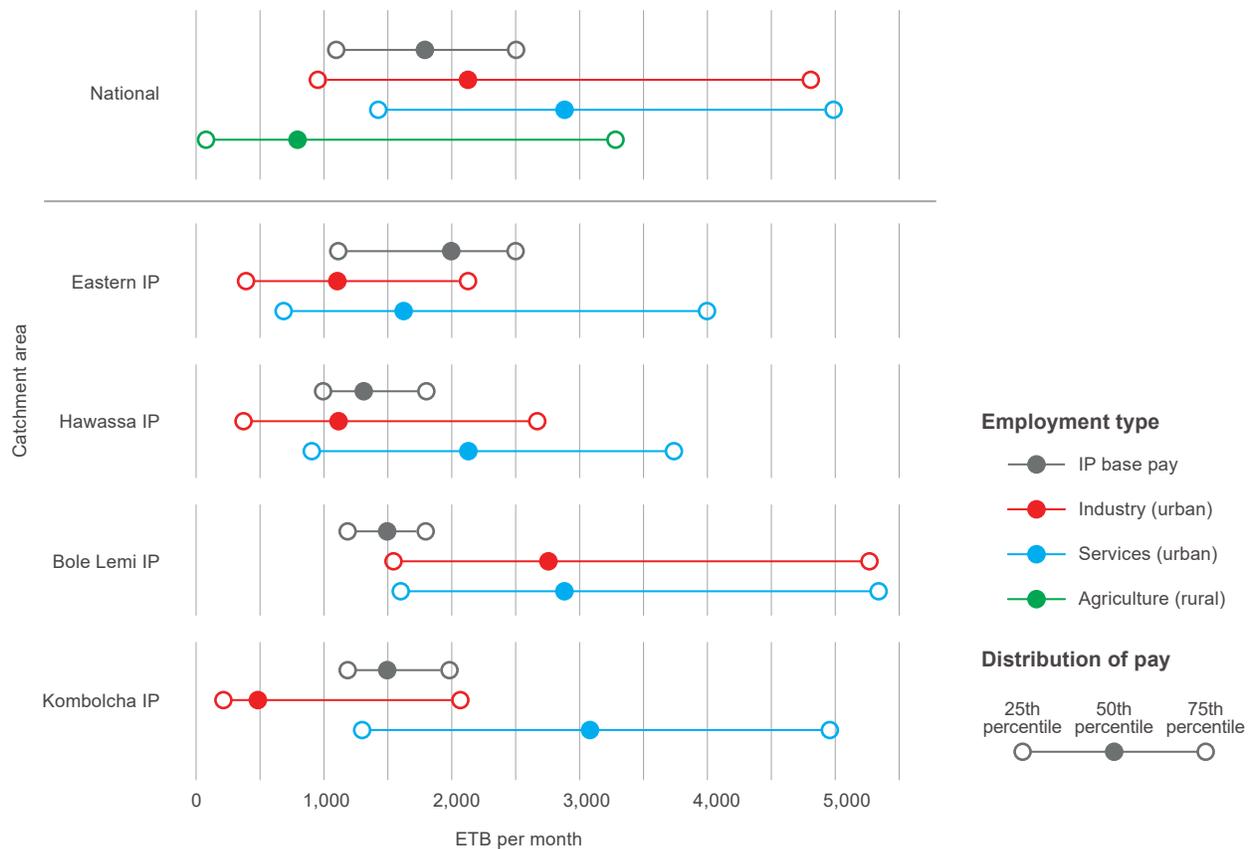
Notes: The grey line indicates the local poverty line per adult equivalent per month in 2020. The darker point represents the median industrial park compensation in the region. The two lighter points on the outside of the line represent the 25th and the 75th percentile of the compensation distribution.

**Industrial park employment appears to provide comparable base pay to alternatives in the local labor market.** The median industrial park firm offers 1,800 ETB of base pay per month. At a national level this is slightly below 2,135 ETB in the industrial sector (see Figure 5). The contrast with the services sector is starker, with a median pay of 2,876 ETB per month. In comparison, payment for agricultural work is just a fraction of the base pay offered in industrial parks, at 812 ETB per month. There is, however, variation in the patterns across the different industrial parks and their catchment areas. It is important to note that the ESS / LSMS is not designed to be representative at this level of geographic disaggregation. The estimates for local labor markets around specific industrial parks should thus be seen as indicative only.<sup>14</sup>

<sup>13</sup> For a qualitative description of how workers experience the transition from agricultural work in the rural area to industrial work in the urban area, please see Dom et al. (forthcoming).

<sup>14</sup> Working hours are roughly similar between jobs in industrial parks and the alternative work options. The median industrial worker outside of a park also works 48 hours, while those in services and agriculture work 40 hours and 32.5 hours at the median.

**FIGURE 5: COMPARISON OF INDUSTRIAL PARK COMPENSATION WITH LOCAL LABOR MARKETS, BY INDUSTRIAL PARK**



Notes: IP base pay is based on industrial park firm survey data. Industry, service, and agricultural wages use data from the fourth wave Ethiopia Socioeconomic Survey / Living Standards Measurement Survey (ESS / LSMS). The catchment areas are the nearby geographical regions where industrial park workers could feasibly find alternative work. To compare the wages of specific industrial parks with outside options, the data is reported for the catchment area of each industrial park. It is important to note that the ESS / LSMS is not designed to be representative at this level of geographic disaggregation. Estimates should thus be seen as indicative only. Since it is especially challenging to define the local catchment area for agricultural work, pay for this kind of work has not been disaggregated.

**BOX 2: CAN FIRM MANAGEMENT PRACTICES EXPLAIN DIFFERENCES IN COMPENSATION?**

Data from other contexts shows that better managed firms tend to hire better workers, pay higher wages, and retain better workers (Bender et al., 2018). Can differences in management practices explain differences in compensation levels and structure in Ethiopia’s industrial parks?

The survey of industrial park firms presented in this note uses the Management and Organizational Practices Survey (MOPS) instrument to measure management practices across firms (Bloom et al., 2016). Unlike the more complex World Management Survey, the MOPS instrument uses simple, self-reported multiple-choice questions, for example, about the use of production targets and the frequency of employee performance reviews. Based on the composite MOPS score, it can be examined whether better managed firms structure their pay packages in a different way than the poorly managed firms. Given the correlational nature and small sample size, this analysis should be seen as merely indicative.

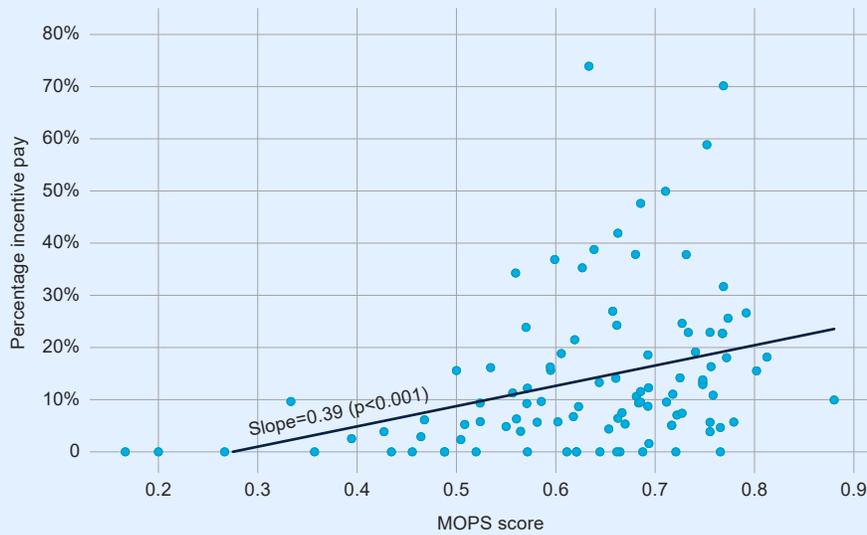
Table B1 and Figure B1 present correlations of firms' MOPS score with total pay and the various components of compensation packages as a proportion of total pay. While management practices appear almost completely unrelated to the level of employee compensation as a whole, better run firms tend to use a significantly larger share of incentive pay in total compensation.<sup>15</sup>

**TABLE B1: PAY COMPONENTS AND MOPS SCORE CORRELATIONS**

	Base pay/ Total pay	Pay in-kind/ Total pay	Incentive pay/ Total pay	Bonus pay / Total pay	Overtime pay / Total pay	Total pay
MOPS score	-0.11	-0.09	0.34***	-0.07	-0.08	0.05

Notes: \*\*\* represents  $p < 0.01$ , \*\* represents  $p < 0.05$  and \* represents  $p < 0.1$

**FIGURE B1: MANAGEMENT PRACTICES AND INCENTIVE PAY**



Notes: The variable on the y-axis indicates incentive pay as a percentage of the total compensation package.

The data also suggests that firms use different compensation schemes strategically. Table B2 below shows correlations of various pay components. While the above-mentioned caveats of small sample size still apply, the correlations are consistent with firms using different employee incentives as complements rather than substitutes (Holmstrom and Milgrom, 1994). This means that the employers are using different pay components to jointly induce effort from their workers.

<sup>15</sup> The relationship between MOPS score and the proportion of incentive pay remains highly significant in a regression of proportion of incentive pay on the MOPS score when including controls for ownership (public/private) and industry classification. The correlation between the proportion of incentive pay and the MOPS score is also robust to the exclusion of a question about performance-related bonuses in the composite MOPS score. This correlation remains significant at the 1 percent level, with a correlation coefficient of 0.35.

**TABLE B2: PAY COMPONENTS CORRELATION MATRIX**

	<b>Base pay</b>	<b>Pay in-kind</b>	<b>Incentive, bonus, and overtime pay</b>
Base pay	1	0.17*	0.315***
Pay in-kind	0.17*	1	0.11
Incentive, bonus, and overtime pay	0.315***	0.11	1

Notes: \*\*\* represents  $p < 0.01$ , \*\* represents  $p < 0.05$  and \* represents  $p < 0.1$

## 5. CONCLUSION

Export-oriented industries are often seen as a vehicle to create jobs that pay more than those available in the local economy. Overall, the novel firm-level data of firms in Ethiopia's industrial parks presented in this note appears to be consistent with this notion. At the same time, large variation between firms and between industrial parks remains. Notably, the data shows that the reported industrial park worker base salary is below the local poverty line for 21 percent of the sampled firms. Especially at the lower end of the income distribution, minimum wages can play a key role to improve the welfare of workers and their households. The Government of Ethiopia established a Wage Board in 2019 to look into this issue. To ensure no adverse labor market outcomes of such regulation, policymakers should carefully assess the broader macroeconomic situation and labor market dynamics including employment rates (labor force participation and unemployment), the share of informal employment, labor productivity, and prevailing wages in various (formal and informal) sectors. The data presented in this note represents one input into such an assessment.

## APPENDIX

### A. Assumptions for in-kind benefits

The survey collected data about three sources of in-kind payment either provided for free or at subsidized rates: provision of full meals, transportation, and housing. These benefits are valued at market prices using the GoE's Central Statistical Agency (CSA) Consumer Price Index (CPI) data for the most recent Ethiopian calendar year available (2011 E.C., which corresponds to 2018/19 in the Gregorian calendar). The market value of benefits was calculated separately for each park location, using an average of the nearest markets available in the CSA data. Market locations are based on Wiedemann (2020).

If meals were provided free of charge by the firm, the market value of one meal was based on using the average price of *shiro* consumed outside the home. The value of one meal was then multiplied by the number of meals provided by the firm per day, the number of days worked per week, and by four to bring the weekly measure up to a monthly measure. If meals were provided at subsidized rates rather than being completely free, the same procedure was used to arrive at the monthly valuation, but it is assumed that the subsidy covers only half of the market price of the food.

For free worker transport to and from the firm, the monthly valuation was calculated using the average market price of a minibus or taxi in the region the industrial park operates. It is assumed that one round-trip journey is provided per day worked. This figure is brought to a monthly level by multiplying by the number of days the employees work per week, multiplied by four. If the transport was provided with a subsidy, it is assumed that the subsidy covers half of the market price of transport.

Finally, for free worker housing provided by the firms, the monthly valuation was calculated using the average monthly rent of a house with two rooms and 32- to 40-meter square area. It was assumed that a house with two rooms is shared by two workers, and thus the expenditure of an employee on rent is one half of the total rental cost. If the housing was only subsidized by the industrial park firm, rather than provided free of charge, then the firm reported the monetary value of the subsidy and this was used in the calculations.

### B. Calculation of local poverty line

Absolute poverty lines based on household consumption expenditure were calculated closely following the GoE's methodology. The GoE has set a poverty line based on a basket of goods defined in 1995/96. This basket of goods provides 2,200 kilocalories worth of food and has remained unchanged since it was first defined. The starting point for the analysis is the GoE's most recent 2015/16 poverty line of 7,184 ETB per month (Government of Ethiopia, 2017). The GoE's spatial price indices are used to take into account regional and rural-urban price differences of food and non-food items. The price indices are then adjusted using weights for the food share (0.525) and non-food share (0.475) of expenditures in the poorest quintile of the population. Finally, GDP deflators are used to bring the local poverty lines up to date with the current year (International Monetary Fund, 2020). This is in line with the GoE's use of GDP deflators in past years.

### C. Calculation of labor market wage rates in the local labor market

For the calculation of wages in alternative employment options, the latest version Ethiopia Socioeconomic Survey / Living Standards Measurement Survey (ESS / LSMS) was used, which is the fourth wave (2018/19). The ESS / LSMS is a nationally representative multi-topic panel survey of over 5,000 households living in rural and urban areas. The survey records individuals' job types using the International Standard Industrial Classifications (ISIC). The wage rates of the formal outside options were calculated by grouping employment into either service, industrial, or agricultural jobs, using the ISIC codes.<sup>16</sup> To compare the wages of specific industrial parks with outside options, the data is also reported for the local area in which the industrial park is located. It is important to note that the ESS / LSMS is not designed to be representative at this level of geographic disaggregation. Estimates should thus be seen as indicative only.

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<sup>16</sup> Industry includes sections manufacturing (section C), construction (section F), mining and quarrying; electricity, gas and water supply (sections B, D, E). Services includes market (sections G, H, I, J, K, L, M, N) and non-market (O, P, Q, R, S, T, U) services. For an overview of sectoral classifications see <https://ilostat ilo.org/resources/concepts-and-definitions/classification-economic-activities/> (last accessed November 13, 2020).

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