

# Ethiopia's potential as a manufacturing destination

## Results from the enterprise surveys

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### Introduction

Industrial location responds to many factors, including geography, transport, logistics and ease of integration into global value chains, domestic market size and agglomeration potential, labor and management skills, policy quality, and more recently ICT readiness (digitization, robotics, AI). On most of these measures, African countries do not perform strongly. Certain industries can of course, draw on a rich and diverse natural resource base. As the Africa Mining Vision emphasizes, resource-rich African countries can encourage forward and backward linkages, especially to small and medium size enterprises, in these industries. Tourism, another rapidly-growing export sector, can also stimulate local industrial and service firms.

The “footloose” industries that have typically served as the entry point for industrialization generally involve labor-intensive segments of industrial value chains. For the African manufacturing sector to succeed, labor costs need to be competitive. Given that poor countries usually have cheap labor African countries should have some of the cheapest labor in the world. The question is — do they, and if so, is African labor cheap enough to compensate for other, less favorable, factors?

Labor costs cannot be considered in isolation as a determinant of competitiveness. Switzerland, for example, ranks at the top of the World Economic Forum's Global Competitiveness Index (GCI). With an outstanding business environment, rich technical and management skills and excellent location, it can sustain a large manufacturing industry despite very high costs of labor. Policy quality and predictability, administrative capacity, human, institutional and governance capital, physical and financial infrastructure, and location can be taken as important indicators of the quality and sophistication of a country's business environment. Some of these indicators are difficult to measure and there is no unique way to combine them into a single index, but many of them correlate quite strongly with GDP per capita. One option, then, is to take this as a proxy for the physical and institutional capacity of the country and the human capital embedded in its workforce. Thus, a comparison of labor cost per worker, given GDP per capita, may help to indicate how well a country can compete on the basis of low labor costs, taking into account its general level of development relative to competitors.

The analysis described in this note is excerpted from Gelb et al, 2017 and builds on work completed in 2013. In both analyses, industrial labor costs are found to be far higher in Africa than one might expect, given

levels of Gross Domestic Product (GDP) per capita. Part of this might be an “enclave effect”: both labor costs and labor productivity are far higher for formal industry in Africa, relative to GDP per capita than in comparator countries. Also, as firms become larger and more productive, their labor costs increase more in Africa than elsewhere. The analysis uses panel data and extends in two new directions. One difficulty of comparing Sub-Saharan Africa with other developing regions is that most African countries are far poorer than most of their actual and potential competitors, resulting in an unbalanced comparison. A simple synthetic control, re-weighting the comparator countries by income group so as to more closely resemble the African income profile is used to address this problem.

The other extension is to take into account the heterogeneity of the African countries by distinguishing three groups: middle-income (essentially South Africa and Botswana); lower income (most of the rest) and countries like Ethiopia and the Democratic Republic of Congo that are so poor, relative to external comparators that they can be considered in a distinct class. Even if African labor costs are high, relative to GDP/head, the low income levels of that group suggest the possibility that some of these countries could be attractive to industries seeking to compete on the basis of low wages. The effect would be to bypass the middle-income countries to settle only in the poorest countries.

## Econometric Analysis

The analytical sample comprises of 5467 firms, 29 countries, and 35 country-year panels, assembled from the World Bank's Enterprise Surveys. The 29 countries are Argentina, Bangladesh, Bhutan, Bolivia, Botswana, Brazil, Cameroon, Chile, Colombia, Democratic Republic of Congo, Ethiopia, Indonesia, Kenya, Lao PDR, Malawi, Mali, Mexico, Nepal, Pakistan, Philippines, Senegal, South Africa, Tanzania, Turkey, Uganda, Ukraine, Uruguay, Vietnam, and Zambia.

From Table 1, the representative African firm is younger, smaller, and more likely to be owned by foreigners than the average comparator firm. The median age does not differ too much; for African firms it is 15 years versus 19 for comparator firms. But 17 percent of the African firms in our sample are owned by foreigners, compared with only 9 percent of comparator firms. The median African firm is also smaller with 37 employees, while the median comparator has 45. However, the average proportion of skilled to unskilled production workers in the firms is nearly the same. This could signal that the human capital of African firms is not significantly different from that of comparator firms, and that the level of technology used in production is similar. But it could also mean — as suggested by some observers — that African firms have to operate with higher levels of oversight and supervisory staff than firms in other parts of the world.

In contrast to these modest differences, there are striking productivity and structural differentials. The

median African firm has sales per worker of \$15,615 compared with the median comparator firm at \$22,335. Even more striking, value added per worker is only \$5,203 for the median African firm but \$11,372 for the comparator firm. Among the firms for which we could calculate value added per worker, we find that African firms' value added is 50 percent of sales, nearly the same as comparator firms. Labor costs constitute 25 percent of value added per worker and 15 percent of sales per worker for African firms. For comparator firms, the numbers are 35 percent and 17 percent respectively.

Capital costs per worker in African firms are high. The median African and median comparator firms have capital costs per worker of \$5,163 and \$4,218, respectively, even though African countries are, on average, far poorer than the comparators. Higher capital cost per worker, lower value added per worker, and relatively similar levels of human capital suggest that African firms have lower productivity and/or pay a higher premium for technology and access to capital than comparator firms.

African labor costs are lower in absolute terms but not as low as we might expect (See Figure 1). Figure 2 shows that African countries have a higher ratio of median labor cost per worker relative to their GDP per capita. While almost all the comparator countries in our dataset have a ratio that is below 1, nearly all African countries are above this threshold.<sup>1</sup>

**Table 1: Descriptive statistics**

	<b>Africa</b>	<b>Comparators</b>
Age	14	19
Share of firms with foreign ownership >= 50 percent	0.17	0.09
Number of employees	38	47
Ratio of skilled to unskilled production workers	1.07	1
Sales per worker (2010 USD, constant)	\$15,615.51	\$22,334.94
Value added per worker (2010 USD, constant)	\$5,202.67	\$11,371.83
<b>Observations</b>	2362	7752

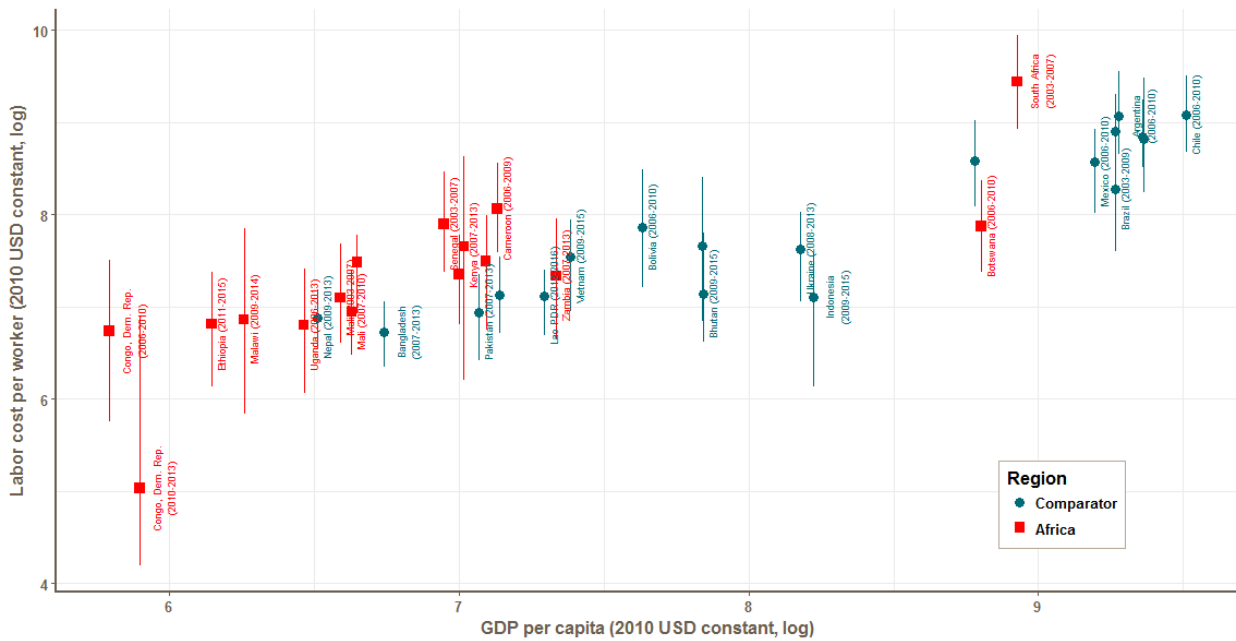
Note: All values are medians except share of foreign ownership

Note: Values for value added per worker are not available for the entire sample.

The median is representative of a smaller sample.

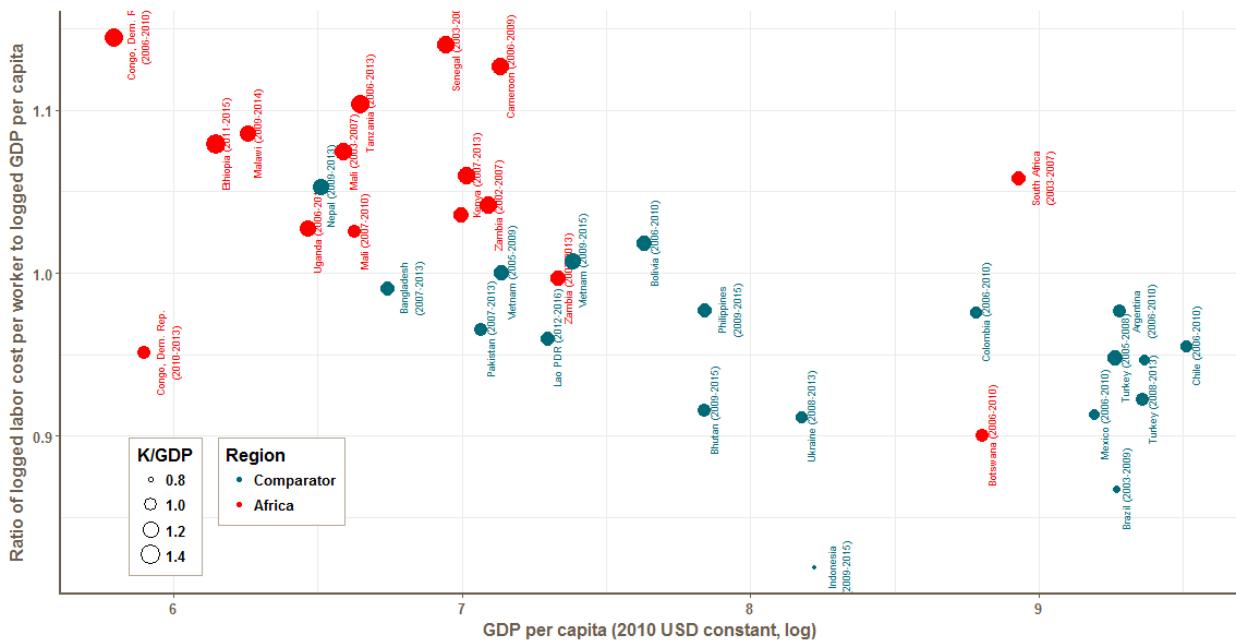
<sup>1</sup> Value of 1 on y-axis indicates that a country's median labor cost per worker is equal to the country's mean wage (defined by the country's GDP per capita).

**Figure 1: Median labor cost v. GDP per capita**



Note: Data for each country shows values for the median, 25th and 75th percentile

**Figure 2: Ratio of labor cost and GDP per capita v. GDP per capita**



Note: K/GDP refers to the ratio of logged capital cost per worker to logged GDP per capita

**Table 2: Comparing countries**

	<b>Labor cost per worker</b>	<b>Capital cost per worker</b>	<b>GDP per capita</b>	<b>WEF competitiveness rankings</b>
<b>Kenya</b>	\$2,118.01	\$9,775.45	\$1,116.69	<b>96</b>
<b>Bangladesh</b>	\$835.31	\$1,069.84	\$853.02	<b>106</b>
<b>Ethiopia</b>	\$909.28	\$6,137.98	\$471.19	<b>109</b>
<b>Tanzania</b>	\$1,776.65	\$5,740.99	\$1,094.95	<b>116</b>
<b>Senegal</b>	\$1,561.64	\$2,421.98	\$775.45	<b>112</b>

Table 2 helps us to better understand these patterns by comparing selected countries: Tanzania, Ethiopia, Kenya, and Senegal, with Bangladesh. The African countries are sometimes cited as among the more competitive while, among the comparator group, Bangladesh is a major manufacturer and has comparable GDP per capita. Indeed, the WEF Global Competitiveness rankings are similar for all of the countries (World Economic Forum, 2017). The labor cost per worker for Bangladesh is \$835, almost identical to its GDP per capita. However, for the four African countries, labor costs per worker are twice or more the level of GDP per capita. Only Ethiopia, at \$909 — is comparable with Bangladesh.

The differences in capital cost per worker are even more striking. For Bangladesh, capital cost per worker is \$1069, only marginally higher than its GDP per capita and far below the levels in the African countries. In contrast, Ethiopia’s capital cost per worker is as high as \$6000, and Kenya’s is close to \$10,000. Senegal has the lowest capital cost per worker among the four countries, \$2421, but still more than twice its GDP per capita.

Table 3 presents the results of random effects regressions with labor cost per worker as the dependent variable. The “Africa premium” estimates the difference in the coefficient for African firms and for comparator firms within the same firm size category.

The random effects model shows that without controlling for GDP, the Africa premium is negative, thus signaling that in absolute terms, the labor cost per worker is lower in African firms. However, after controlling for GDP per capita, the labor cost per worker for African firms is found to be much higher than those for comparator firms.

The estimates also suggest that the Africa premium increases with increase in firm size. While a small African firm is 39 percent more expensive than a small comparator firm, a medium African firm is 52.3 percent more expensive than a medium comparator firm. Medium and large African firms have similar premiums associated with them — a large African firm is 49.7 percent more expensive than a large comparator firm. A very large African firm is most expensive with a premium of 54.7 percent over a very large comparator firm.

**Table 3: Random effects model**

	<b>(1)</b>		<b>(2)</b>		<b>(3)</b>		<b>(4)</b>		<b>(5)</b>	
	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium
Africa small firm	-1.036*** (0.0947)	-1.036***	0.782*** (0.0828)	-0.782***	0.413* (0.219)	0.413*	0.271 (0.217)	0.271	0.390** (0.177)	0.39**
Comparator medium firm	-0.0398		-0.0153		0.0608+		0.0660+		0.0499	
Africa medium firm	(0.0570) -0.510*** (0.0816)	-0.470***	(0.0539) -0.452*** (0.0763)	-0.437***	(0.0415) 0.726*** (0.188)	0.665***	(0.0422) 0.603*** (0.196)	0.537***	(0.0454) 0.573*** (0.153)	0.523***
Comparator large firm	-0.115*		-0.117*		0.194**		0.207***		0.126**	
Africa large firm	(0.0679) -0.0609 (0.108)	0.054	(0.0644) -0.159+ (0.102)	-0.042	(0.0769) 0.899*** (0.230)	0.705***	(0.0768) 0.802*** (0.245)	0.595**	(0.0532) 0.623*** (0.214)	0.497**
Comparator very large firm	-0.449***		-0.286***		0.0993		0.123		0.111	
Africa very large firm	(0.106) -0.0182 (0.198)	0.431**	(0.0945) -0.0235 (0.210)	0.263	(0.106) 0.893*** (0.180)	0.794***	(0.106) 0.811*** (0.194)	0.688***	(0.0950) 0.658*** (0.184)	0.547***
Log GDP per capita					0.796*** (0.0819)				0.659*** (0.0625)	
Log GDP per capita (age dep. adj.)							0.817*** (0.0853)			
N	5467		5467		4565					

Standard errors in parentheses + p<0.15 \* p<0.1 \*\* p<0.05 \*\*\* p<0.01

There is evidence of a pay gradient — labor in larger firms is more expensive than in smaller firms in all countries. However, this pay gradient is not steeper for African firms in every size category. Labor in a medium-sized African firm is on average, 26.6 percent more expensive than in a small firm; this difference is only 6 percent for comparator firms. The pay gradient is steeper for comparator firms when we compare large and medium sized firms (14 percent for comparator firms vs. 5.8 percent for African firms).

Finally, weighted random effects regression models using the synthetic control as the comparator are described in Table 4. They are essentially the same as those for the unweighted regressions, suggesting that observed differences between manufacturing in Africa and elsewhere is not simply due to an unbalanced comparison. Similarly, we find results are little changed if we use age-dependency adjusted GDP per head in the regressions.

**Table 4: Random effects model: weighted (synthetic control)**

	<b>(1)</b>		<b>(2)</b>		<b>(3)</b>		<b>(4)</b>		<b>(5)</b>	
	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium	Log labor cost per worker	Africa premium
Africa small firm	-0.78*** (0.10)	-0.78***	-0.58*** (0.09)	-0.58***	0.40* (0.21)	0.40*	0.40** (0.17)	0.40***	0.29* (0.16)	0.29***
Comparator medium firm	0.03		0.03		0.10**		0.07*		0.08**	
Africa medium firm	(0.06) -0.31*** (0.09)	-0.34***	(0.06) -0.30*** (0.08)	-0.33***	(0.04) 0.69*** (0.18)	0.59***	(0.04) 0.56*** (0.14)	0.49***	(0.04) 0.46*** (0.14)	0.38***
Comparator large firm	-0.14*		-0.14**		0.17**		0.10*		0.12**	
Africa large firm	(0.08) 0.12 (0.11)	0.26**	(0.07) -0.03 (0.10)	0.11	(0.09) 0.87*** (0.23)	0.70***	(0.06) 0.61*** (0.21)	0.51**	(0.06) 0.54** (0.22)	0.42**
Comparator very large firm	-0.50***		-0.27***		0.05		0.15*		0.18**	
Africa very large firm	(0.10) 0.09 (0.20)	0.59***	(0.09) 0.08 (0.22)	0.35+	(0.10) 0.80*** (0.20)	0.75***	(0.08) 0.61*** (0.20)	0.46**	(0.08) 0.55** (0.22)	0.37**
Log GDP per capita					0.77*** (0.08)		0.65*** (0.06)			
Log GDP per capita (age dep. adj.)									0.67*** (0.06)	
Capital Cost	N		Y		N		Y		Y	
Industry FE	Y		Y		Y		Y		Y	
N	5467.00		4565.00		5467.00		4565.00		4565.00	

Standard errors in parentheses + p<0.15 \* p<0.1 \*\* p<0.05 \*\*\* p<0.01



## Can Ethiopia be the New China?

These results do not suggest a particularly bright future for footloose, labor-intensive manufacturing in Africa. However, “Africa” encompasses a very wide range of countries and conditions. The statistical picture suggests breaking down the African sample countries in three groups.

The first group consists of the solidly middle-income countries, dominated by South Africa but also including Botswana. Relative to middle-income comparators, South Africa’s labor costs are very high; they are the highest in the sample even though it includes some richer countries. Even in the face of unemployment levels of between 20 and 30 percent, its industrial sector is highly capital intensive. There are few small informal firms and those that do exist have low productivity, even relative to firms in other, poorer, African countries (Gelb, Mengistae, Ramachandran and Shah, 2009). Irrespective of whether the cause of this dualism reflects structural factors or restrictive labor laws and high statutory minimum wages, the country is not likely to emerge as a strong competitor in labor-intensive industry in the foreseeable future. The furor over the Newcastle experiment suggests that pay levels low enough to compete with poor countries are politically unacceptable. (Nattrass and Seekings, 2014).<sup>2</sup>

The second group includes leading low and lower-middle income African countries like Kenya, Tanzania and Senegal — coastal, relatively stable, and with a strong business sector, particularly in the case of Kenya. If any countries were to feature in an African manufacturing take-off, these countries would surely be expected to be in the vanguard. Indeed, there may be some local and regional stimulus from the growth in intra-African trade. Yet, taking the broader global picture, as shown in Table 2, their manufacturing labor appears costly relative to that of Bangladesh, a country with comparable income level and WEF competitiveness rating. On average, the firms in these countries are also smaller; to the extent that they confront

a sharp pay gradient the picture is even more clouded since successful, expanding, firms will probably need to pay still higher wages.

The third group consists of countries at the very low end of the income spectrum, so poor that there are almost no real comparators. In our sample, the DRC, Ethiopia and, to a lesser degree, Malawi, appear to fit the bill. As a destination for footloose manufacturing the DRC is implausible. Rich in natural resources, the governance failings that have depressed its business climate and income leave little opportunity for investors in such sectors; like Malawi, the DRC is also very low on the WEF rankings. Ethiopia is another matter however. Though landlocked, it has been moving towards easing logistics constraints through road and rail connections; it also has good air connections. It benefits from a stable administration, that sees the manufacturing as a central part of its growth strategy. It also benefits from generally low costs. As measured by Purchasing-Power Parity, the general level of prices in Ethiopia is below the level in India and comparable to that of in Bangladesh. The firm surveys also suggest comparable levels of labor costs and a similar WEF Global Competitiveness ranking despite its far lower income level.

Could Ethiopia become the new China? For the last several decades, Asian countries such as China, India, and more recently, Bangladesh have been attractive destinations for low-wage manufacturing. However, with labor costs now rising faster than gains in productivity, and with the strengthening of their local currencies, large manufacturing firms have started exploring opportunities for production outside Asia. Recently, Huajian International, a manufacturer of shoes, has been receiving complaints from workers about long hours (New York Times, 2017); workers have also been seeking more pay. The young population of China is shrinking, largely attributed to the “one child” policy; more youth are attending college and wanting office jobs, instead of jobs in manufacturing. This shift in the demographic profile is contributing to a fall in new labor entrants and a more expensive workforce for manufacturing jobs.

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2 In 2010 South Africa’s National Bargaining Council for the clothing industry launched an aggressive compliance drive against firms that were not compliant with the escalating wage levels set by the Council and Ministry of Labor. Many were concentrated in Newcastle, an area with few alternative employment options. The union accepted that there would be job losses when non-compliant firms were closed, but this was justified in terms of ensuring that the industry only provided ‘decent work’. Many firms were forced to close their doors, despite the protests from local workers who saw no other employment possibilities.

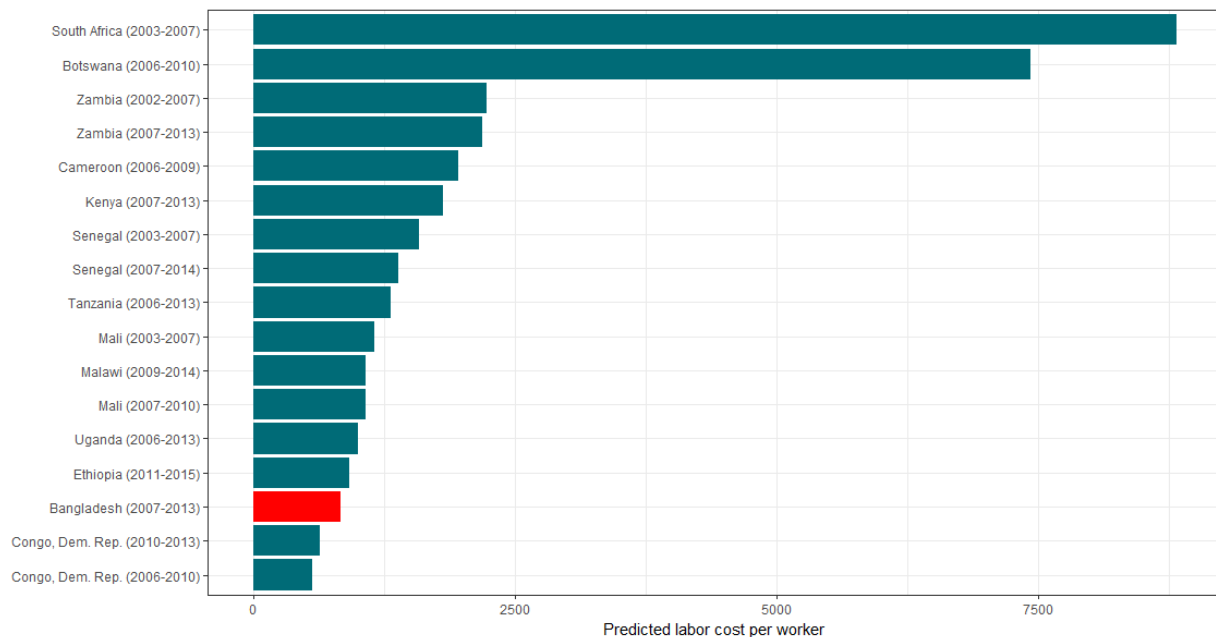
Fashion brands like H&M are now finding potential in Ethiopia, one of the few African countries being proclaimed for having cheap labor (Wall Street Journal, 2013). Their optimism appears to be supported by the data — Figure 3 depicts the median predicted labor costs per worker for all African countries and for Bangladesh, modeled as if it was located in Africa. Ethiopia's labor cost is reasonable compared to other African countries as well as to Bangladesh, and appears similar to China in the 1980s.

To provide further confirmation, we carried out a small survey of production workers in a typical garment factory. Most were female, all had at least primary education and were literate. For many, this was their first formal job. Wages were uniformly low, averaging around \$2 per day, but after allowing for the cost of local accommodation (which in this case was not provided by the firm) this fell to little over \$1 per day. At these pay levels, the cost of industrial labor in Ethiopia would be only about 25% that of China today. From the employees' responses, there is little prospect of supply and demand factors resulting in a rapid tightening labor market. A common refrain was the desperate need for employment to absorb surplus labor from the countryside. Ethiopia is one of the least urbanized countries, and, much like China in the 1980s can offer a young, abundant, and well-educated workforce.

A recent McKinsey survey administered to Chief Procurement Officers of large apparel companies, asked questions regarding which countries would serve as the top manufacturing destinations in the next five years (Berg et al, 2015). While Bangladesh seemed to take the place of China as the most attractive manufacturing location, this was the first time that several survey respondents also expressed interest in African countries. Ethiopia was ranked seventh in the world, and first among African countries, followed by Egypt and Tunisia, but none of the leading lower-middle income countries made the grade. It seems that another reason why some manufacturers are seeking to diversify away from Asian industrial locations is the ongoing reputational problem of poor working conditions. Some claim that manufacturing working conditions in Ethiopia — though far from ideal — are better than in Bangladesh and Cambodia (Business of Fashion Blog). In the International Trade Union Global Rights Index, Ethiopia fared better than Mexico and Malaysia (ibid.). Our survey results were mixed in this area, with some voicing health and safety concerns but others appreciating their jobs despite low pay and expressing good relationships with supervisors.

Nevertheless, certain factors could derail industrialization in Ethiopia. Political unrest could unsettle investment in the manufacturing sector if repeated on the scale seen in 2015 and 2016. Even with some of the

**Figure 3: Median predicted labor cost per worker using random effects coefficients**



cheapest electricity in Africa, grid failure and power outages are severe issues. Manufacturing firms often have to rely on generators that are four times more expensive than grid electricity. There has been some support from the Ethiopian government to improve electricity access by setting up a grid for industrial zones and ensuring its reliability, as well as major investments to tap the country's abundant hydro-electric potential. If successful in these areas, Ethiopia could as well emerge as the China of Africa. In fact, H&M has already begun its factory operations in Mekele, promising 4000 jobs to locals (Sourcing Journal, 2016). Some are hopeful that this high-profile venture will attract many more investors to the country.

### **Conclusion: Can Manufacturing Drive Development in Ethiopia and Other African Countries?**

It is always risky to speculate on the future, especially considering evolving trends in technology which will shape the evolution of comparative and absolute advantage in manufacturing, among other sectors (Norton 2017). However, based on the survey data, Africa does not, in general, appear to be poised to embark on a manufacturing-led take-off, stepping into the shoes of emerging Asia. The results confirm the conclusions of previous research that that lower-income Africa, including countries that have come to be thought of as leaders in development, has high manufacturing labor costs relative to GDP as well as

high capital costs relative to low-income comparators. Labor in middle-income Africa is also very expensive relative to in comparator middle-income countries. Re-balancing the comparators through a simple synthetic control and adjusting for demographic differences do not change these conclusions.

Breaking "Africa" down into sub-groups suggests a more nuanced picture. Within the sample Ethiopia stands out as distinctive. Its income level is so low that there is no real external comparator; its costs also appear to be low. This opens up the question of whether the "flying geese" migrating out of much of emerging Asia will pass over middle and lower-income Africa to find a landing place in the poorest countries, provided that they can provide a stable platform for the industry. The survey results suggest that this is not impossible, and they are supported by other, emerging, evidence.

These results suggest further avenues of research. We do not really understand the factors behind prices and costs, whether for industrial labor or, more generally, in terms of purchasing-power parity price levels, and why so many African countries appear to be costly relative to their income levels. It would also be useful to understand better the determinants of industrial investment and development in the poorest countries where carefully designed industrial policy can possibly unleash the potential for manufacturing and rapid industrialization, as well as the impact on living standards.

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