

POLICY POINTS

Increase industrial

engagement by promoting the local workforce to become actively employed in workshops.

Local entrepreneurs should

create more factories to compete, supply, or work alongside foreign companies.

Local authorities should**actively encourage**

more projects in the manufacturing sector.

Foreign investors should put**an emphasis** on skill training

and experience sharing

to make the investment

environment more favorable

for their own business growth.

Chinese Manufacturing Investments and Knowledge Transfer: A Report from Ethiopia

Tang Xiaoyang

ALTHOUGH FDI IN MANUFACTURING SECTORS IS USUALLY welcomed by host countries, its impact on the development of local human resources and technological capacity are hotly debated. The uniqueness and diversity of socio-economic conditions in Africa call for a careful case-by-case examination to understand the real impacts of FDI on knowledge development. This study aims to shed light on the knowledge transfer effects of Chinese investment in Africa's manufacturing sector with a concrete case study of Ethiopia. This paper examines knowledge transfer mechanisms between Chinese investments and Ethiopian firms, institutions, and individuals in the manufacturing sector. The lessons learned from this case may provide insights into China-Africa cooperation and Africa's development process in general.

As of 2015, Ethiopia was the third largest destination for Chinese manufacturing investors in Africa with 117 manufacturing firms registered with the Chinese Ministry of Commerce. According to the Ethiopia Investment Commission's (EIC) records, 1,022 Chinese investment projects were licensed in the country between 2007 and 2017, making them the largest group of foreign investors in terms of numbers of projects. As of August 2017, 466 licensed projects in operation were in the manufacturing sector. Striving to develop local technological and marketing capabilities, the Ethiopian government has consciously guided FDI from China and other Asian countries to the manufacturing sector. Such efforts offer a remarkable case to explore how African agents play an active role in shaping the dynamics and outcomes of engagements with China.

This study is mainly based on field research conducted in July and August 2017. We surveyed 73 Chinese manufacturing projects and interviewed their managers and workers across the three operating industrial zones in Ethiopia, namely Eastern, Bole-lemi, and Hawassa. The other surveyed projects were located within a 100-km radius of Addis Ababa. We interviewed Ethiopian investment and industrial zone authorities, industrial associations, and a dozen Ethiopian firms in the manufacturing sector.

SKILL LEARNING WITHIN FIRMS: EMPLOYMENT

THE FIRMS SURVEYED PRODUCE a wide array of products, as Chinese manufacturers are present in diverse sectors in Ethiopia. Fourteen firms reported investments of over

100 million CNY (US\$ 15.15 million), whereas fifteen firms had invested less than 7 million CNY (US\$ 1 million). The 73 factories reportedly employed a total of 27,690 Ethiopians and only 1,434 expatriates. While most expatriates were Chinese, dozens were also from Kenya, Mauritius, Sri Lanka, Myanmar, Vietnam, India, South Korea, and other countries. There are apparent sectoral differences regarding the use of local employees, with the garment-making sector having the lowest expatriate ratio - no more than 5% of the entire work force.

TRAINING

ALL SURVEYED FIRMS CONSIDERED learning-by-working as the most effective training approach for their workers. The shortcoming to such a pragmatic approach is that workers do not grasp in-depth knowledge about machinery and the production process. Some factory managers complained that local workers did not know how to maintain or repair machines and were reluctant to entrust local workers with operating sophisticated machinery critical to production. Linguistic barriers also hinder precise learning. Most Chinese and Ethiopian workers do not speak English well and often have to use a combination of Chinese, English, Amharic, Oromian, and gestures to communicate. Another challenge for training is the export market's high quality demands.

A few factories offer more systematic and advanced forms of training, especially when they produce for the international market. Huajian Group is one of the largest manufacturers of ladies' shoes in the world. Their Ethiopian factory has a multi-level training system. Newly recruited workers receive a weeklong, pre-work training, do military style drills, learn the company's culture of strict discipline, and are instructed in a special training center within the factory itself. They learn how to use sewing machines and upon passing certain tests begin working on the production line. Training continues at work as production line supervisors monitor performance and provide personal tutoring. The company regularly sends workers to China for training lasting three months to a year, approximately 500 local employees have been sent to the firm's headquarters. Apart from learning skills working alongside Chinese factory workers, trainees also improve their Chinese language proficiency.

TURNOVER

A LARGE PROBLEM AFFECTING TRAINING outcomes is the high turnover rate among workers. According to managers, workers leave for several reasons, including low wages, a need to care

for family members, attraction of other new factories, and the desire to work in less laborious sectors. One manager estimated it could take another two to three years for the work force to stabilize. Stabilization appears to have already happened in older factories. For example, Huajian shoe factory, in operation since 2012, reported that annually only 5% of its local workers leave the company.

However, Huajian has found it challenging to keep its workers trained overseas. When the first group of Ethiopians sent to China returned in 2012, over 70 of the 86 trainees left Huajian within six months. They had expected to become supervisors with high salaries after being trained in China, but in reality remained in the assembly line earning almost the same as newly recruited workers. They cited low income and dashed expectations as the main reasons for leaving. As there were no other large shoe factories in the area, none of the interviewees were working in shoe production and the learned skills were wasted. In addition, other Chinese firms actively poach Ethiopians trained in China. Because of these constraints, many Chinese employers are reluctant to provide expensive overseas training or to invest in any form of relatively intensive training.

LOCAL MANAGERS

THE PARTICIPATION OF ETHIOPIANS in enterprise management indicates the extent of more sophisticated knowledge learning, as only 10 of the surveyed enterprises reported having no local managers or supervisors. Ethiopians who rise to management positions usually start by managing workers in the production lines, often assisting Chinese managers, and gradually move up to higher responsibilities. Apart from the production department, Ethiopian managers are often used in Human Resources and Administration departments. They are considered mediating agents between Chinese executives and Ethiopian workers.

However, the limit to local managers' skills is that they only concentrate on labor-intensive production processes and do not know the industry's entire value chain. Export-processing factories usually receive their orders from overseas headquarters, which globally source raw materials and are home to the design teams that create new products. Ethiopian factories merely implement the production instructions. Studies on apparel manufacturing investments in other African countries confirm that knowledge transferred to the relocated production base is elementary and partial, due to investors' strategies as well as the nature of global value chains.¹

KNOWLEDGE TRANSFER BETWEEN ENTERPRISES

AT THE INTER-FIRM LEVEL, ETHIOPIAN FIRMS have actively engaged with arriving Chinese investors in various manners. In our survey, 65.75% of Chinese investors had local suppliers. Although the proportion between Chinese and local managers among the six surveyed joint venture firms was on average 1:1, local managers in joint ventures occupied more critical positions, leading sales, finance, human resources, and general management, whereas the role of Chinese partners in three of the six projects was mainly limited to production and procurement. Through competition, forward and backward linkages, and joint ventures, local firms have managed to expand their business areas and improve technological efficiency. By comparison, demonstration of advanced business models by Chinese firms and movement of workers from foreign companies may be welcomed by Ethiopians, but they do not have substantial effects on local firms because local firms do not have the corresponding financial and market resources.

CLUSTERING AND KNOWLEDGE TRANSFER

CHINESE FIRMS TEND TO INVEST IN GROUPS either by sector or geographically. Chinese investors introduced the industrial zones model to Ethiopia with the support of China's own development experience and the Chinese government. Eastern Industrial Zone's establishment provides a concrete example of using zonal clustering to attract manufacturing investments. Ethiopian authorities now view industrial zones as a helpful policy instrument to attract FDI and the Ethiopian Ministry of Industry has commissioned China's Association of Development Zones to design a more comprehensive industrial zone program. A dedicated state-owned enterprise, Ethiopian Industrial Parks Development Corporation (IPDC), was created in 2014 to develop and administer industrial parks. IPDC plans to construct eleven industrial parks in various cities around Ethiopia and actively promote them internationally.

Apart from geographically defined zones, Chinese investors tend to flock into certain industrial sectors when opportunities are found. This is a common phenomenon for Chinese investments in Africa, often Chinese businessmen come to invest through friends, relatives, business partners, or former employers. Clustering creates an improved operational environment and knowledge sharing opportunities. The Ethiopian government's policies and capacities have evolved to support sectors, learning enterprises' demands and characteristics. Investment concentration facilitates interconnections and forges value

chains between enterprises. This reduces transaction costs and increases FDI projects' competitiveness. Prior studies also found that industrial clustering can speed up the rate of technology diffusion to local firms.² Clustered FDI primarily transfers technology and knowledge via its workers. Researchers discovered that workers recruited and trained by clustered multinational corporations (MNCs) were more likely to move to local competitors or create their own firms, whereas dispersed MNCs appeared to soak up and retain experienced labor from other parts of the economy; in other words, firms within clusters experienced higher levels of staff turnover.³ The survey in Ethiopia shows that turnover rates in Chinese firms are indeed quite high, partly because numerous firms exist in the same zone or in the same sector. Yet, as noted earlier, Chinese firms began training staff relatively recently and local firms have not yet seen the benefits of experienced labor from foreign firms.

Clustering also extends the production value chain and increases opportunities for engagement with local firms. Export-oriented garment makers used to import almost all their fabrics and had virtually no backward linkages with Ethiopian suppliers. The establishment of Hawassa Industrial Park has attracted more than a dozen garment makers to invest and a textile maker, Wuxi Jinmao, to supply high-quality fabrics. Wuxi Jinmao created a supply linkage by sourcing chemicals, like caustic soda and sodium carbonate, from local firms.

CONCLUSION

OUT OF THESE PRACTICES, across different levels, we observe several general characteristics of the knowledge learning mechanism. First, knowledge transfer constraints are often caused by a lack of industrial capacity. For Ethiopian workers and companies, a main reason for their lack of skills is that they are not familiar with the international markets' standards and requirements. Likewise, being inexperienced in export manufacturing, Ethiopian authorities create counter-productive custom, foreign exchange, and visa permit regulations. In addition, sectoral institutes do not provide practical training for factory operations. Learning of industrial knowledge seems to have a paradox: skill development requires more manufacturing activities, whereas manufacturing investments tend to flow to where a skilled work force and administration already exist. This chicken-and-egg like paradox suggests that knowledge transfer requires synergy development.

Industrial clustering and industrial zones may facilitate the formation of such a synergism. The concentration of

Chinese investors can attract numerous local workers to look for manufacturing jobs, drive local firms to learn business models, strive for competition or seek collaboration, and draw the Ethiopian government's attention to improve the industrial environment. Unlike individual projects, clusters and zones create eco-systems for manufacturing, which nurture diverse and complex interactions between various stakeholders. For Ethiopian workers, they may move between firms in similar sectors and find more suitable positions in different factories. In addition, gathering tens of thousands of workers in clusters makes it easier for the overall work force to stabilize, as transportation and housing services are more available due to the economy of scale.

For local manufacturers, the arrival of Chinese firms also enables multiple levels of interaction and opportunities for knowledge sharing and technology transfer. From observation and imitation to competition and cooperation, Ethiopian firms can explore various approaches to engage with Chinese investors. These engagements help local enterprises obtain practical experience and business ideas from Chinese investors, while Chinese firms expand their business and expand their presence deeper into the local market. For the Ethiopian government, the grouping of Chinese firms does not only bring desired financial and technical resources, but also promotes political economic ties with the Chinese government. In a resource-poor country like Ethiopia, Chinese-invested industrial zones and numerous manufacturing projects become the highlight of bilateral collaboration.

POLICY RECOMMENDATIONS

1. Ethiopia needs to increase industrial engagement by promoting the local workforce to become actively employed in workshops.
2. Local entrepreneurs should create more factories to compete, supply, or work alongside foreign companies.
3. Local authorities should actively encourage more projects in the manufacturing sector.
4. Foreign investors should put an emphasis on skill training and experience sharing to make the investment environment more favorable for their own business growth. ★

ENDNOTES

1. Staritz and Frederick, "Sector Case Study: Apparel," in Farole and Winkler, *Making Foreign Direct Investment Work for Sub-Saharan Africa*, (2014): 209-244; Xiaoyang, The Impact of Asian Investment on Africa's Textile Industries (Carnegie-Tsinghua Center for Global Policy: 2014); Xiaoyang, "Assessing the Impact of Chinese Investment on Southeast Africa's Cotton," Policy Brief No. 6, CARI-SAIS, 2015.
2. Osano and Koine, "Role of Foreign Direct Investment on Technology Transfer and Economic Growth in Kenya," *Journal of Innovation and Entrepreneurship* 5, no. 31 (December, 2016); Managi and Bwalya, "Foreign Direct Investment and Technology Spillovers in Sub-Saharan Africa," *Applied Economic Letters* 17, no. 6 (2010): 605-608;
3. Thompson, "Clustering of Foreign Direct Investment and Enhanced Technology Transfer," *World Development* 30, no. 5 (May 2002): 873-889.

AUTHOR

TANG XIAOYANG is an Associate Professor at the Institute of Modern International Relations at the Tsinghua University in Beijing, China. His research interests include political philosophy, China's engagement in Africa, and the modernization process of developing countries. He is the author of *China-Africa Economic Diplomacy* (2014).

THE SAIS CHINA-AFRICA RESEARCH INITIATIVE at the Johns Hopkins University School of Advanced International Studies (SAIS) in Washington, D.C. was launched in 2014. Our mission is to promote research, conduct evidence-based analysis, foster collaboration, and train future leaders to better understand the economic and political dimensions of China-Africa relations and their implications for human security and global development.

SAIS China-Africa Research Initiative
1717 Massachusetts Ave NW, Suite 733
Washington, DC 20036
www.sais-cari.org
Email: sais-cari@jhu.edu

This research was funded by research grant ES/M004074/1 from the UK's Department for International Development and the Economic and Social Research Council (DFID/ESRC), which supports research to provide evidence-based analysis of technology transfer, linkages, learning, and spillovers associated with Chinese investment in African manufacturing, agribusiness, and construction industries.

