The World's Next Great Manufacturing Center

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In a low-slung office building at his giant ceramics factory in southwestern Nigeria, Sun Jian insisted that we have tea. He had just returned from a trip to China, and he had a batch of top-quality tea he wanted to share with visitors, in an age-old gesture of Chinese hospitality.

Sun is from Wenzhou, a midsize city in southeastern China. Nearly 4,000 years ago the lustrous, pale green glaze called celadon was invented in Wenzhou, which became the birthplace of Chinese ceramics. In the 1970s, however, times there were tough. After elementary school, Sun dropped out and started working. In 1978, two years after Mao Zedong's death, Wenzhou was the first city in China to establish private enterprises. Sun worked his way up through several leather-processing factories and eventually saved enough to start his own leather manufacturing business. But by the late 2000s costs were climbing at an alarming pace, and he knew he needed to move out of China. A friend suggested he think about Nigeria.

He went for a five-day visit. "Immediately all these poor people were asking for money," he told me. "But then I realized there are a lot of rich people, too, and although it's hard to make it in this market, it's just as hard for everyone else as it is for me." Back in China he called an acquaintance at the customs authority and asked him what was the heaviest, most expensive to ship product being exported in large quantities to Nigeria. The answer? Ceramics.

After that single visit, Sun devoted about $40 million to building a ceramic tile factory in Nigeria. It runs around the

clock and employs nearly 1,100 workers, a thousand of them locals. Electricity is unreliable and costly, but business is good. Nigeria, with its relative lack of competition and booming demand, allows Sun to earn a 7% profit margin, compared with the 5% he earned in China. In manufacturing, margins are often razor-thin, and a 2% bump is substantial.

Sun’s story is not unusual. According to data from the Chinese Ministry of Commerce, privately owned Chinese companies are making more than 150 investments a year in the manufacturing sector in Africa, up from only two in 2000. The real figure is probably two or three times as large: Scholars doing fieldwork on the topic routinely encounter Chinese companies that have not been captured by government data.

These companies are already having a major impact. In Nigeria, Chinese businesses smelt steel to fuel the construction boom in Africa’s largest economy. In tiny Lesotho, Chinese and Taiwanese companies churn out Kohl’s yoga pants, Levi’s jeans, and Reebok athletic wear destined for U.S. shopping malls. They’ve made the clothing industry the largest economic sector in the country. In Ethiopia, just as the British pharma giant GSK was scrapping its plans to build a drug production plant, Humanwell, a Chinese pharmaceutical company, broke ground on a $20 million production site outside Addis Ababa; its board approved an eventual investment of $100 million in Ethiopia’s pharmaceutical sector.

Over the past few years, I’ve talked to nearly 50 Chinese manufacturing entrepreneurs across half a dozen African countries. In the following pages I describe how their investments are transforming Africa’s economy and society by providing millions of Africans with formal employment for the first time, fostering a generation of African entrepreneurs, and inspiring African institutions to support vibrant manufacturing

clusters. These entrepreneurs are not saints, of course. Bribery, poor working conditions, and problematic environmental practices are pervasive. But Chinese manufacturers are arriving in larger and larger numbers in Africa, and manufacturing—unlike natural resources or services—leads to the possibility of industrialization. An industrial revolution in Africa: This is no longer a far-fetched notion.

The Largest Pool of Labor in the World

Chinese entrepreneurs are being both pushed and pulled into Africa. On the push side, China's ascendancy in global manufacturing is now coming under structural pressure. A generation under the one-child policy has shrunk the country's labor pool, causing shortages in its coastal manufacturing hubs. And labor costs have risen sharply in recent years: Hourly manufacturing wages have increased by 12% annually since 2001, and productivity-adjusted manufacturing wages nearly tripled from 2004 to 2014.

According to Justin Yifu Lin, a former chief economist at the World Bank, "China is on the verge of graduating from low-skilled manufacturing jobs….That will free up nearly 100 million labor-intensive manufacturing jobs, enough to more than quadruple manufacturing employment in low-income countries." To put that into perspective, when manufacturing employment reached its peak in the United States, in 1978, only 20 million people had jobs in American factories. Now five times that number of jobs are about to migrate out of a single country: China.

Meanwhile, Africa is in the early stages of a population boom that will reach 2 billion people by 2050, creating the largest pool of labor in the world. (Southeast Asia will have only 800 million people by then.) Yet African nations have some of the highest

unemployment rates in the world. The official unemployment rate in Nigeria is 12.1%, but the government recognizes an additional 19.1% of the working-age population as "underemployed." For young people, the situation is much worse: Youth unemployment is at 42.2%. Thus Africa is a natural destination for China's manufacturing jobs.

From the corporate investor's perspective, one advantage is that although Africa is still challenging in many ways, it offers arguably the widest array of market options. Nigeria boasts an enormous domestic market with high margins and relatively little competition for a variety of consumer goods. Lesotho enjoys tariff-free access to the U.S. market along with proximity to excellent South African infrastructure and logistics services for shipping time-sensitive fashions to American customers. Ethiopia offers attractive tax breaks along with cheap power and proximity to lucrative Middle Eastern markets. In other words, Africa can provide an appealing location for pretty much whatever business model a manufacturer has.

The demand side is also trending favorably. National governments in Africa have taken decisive steps toward integrating regional markets, which will reduce costs and increase opportunities for entrants. In 2015 half the countries in Africa joined the Tripartite Free Trade Area, which will combine 600 million people in a single trading bloc, forming the 13th-largest economy in the world. The six nations of East Africa have gone a step further, creating a single customs union to boost trade, harmonizing regulations to ease doing business, and instituting a single visitor's visa to facilitate the movement of people across their borders.

Let's now look at the effects of Chinese private investment in Africa.

The Promise of a Future

The word on the street in Africa and the sentiment in African newspapers is that Chinese companies don't hire Africans. But every rigorous study shows precisely the opposite: Chinese factories in Africa overwhelmingly employ locals. A recent meta-analysis of the various statistics that have been collected shows no sample in which the proportion of local workers dips below 78%, and in some companies with thousands of employees, the figure exceeds 99%. In Nigeria my own (admittedly small-scale) field research shows that 85% of workers hired by Chinese manufacturers are locals. A larger-scale Chinese-language survey in Kenya found that 90% of the employees in Chinese manufacturing and construction companies were local hires and, moreover, that as Chinese enterprises operated in Kenya over time, their percentage of local hires increased.

Wherever factories cluster, local suppliers spring up and scale up.

Ahmed Ibrahim has lived out this reality. As he showed me around the cardboard box factory I was visiting in Nigeria, I saw that he knows everything about making cardboard: the idiosyncracies of pulp suppliers, the process of unloading truckloads of raw materials, the ins and outs of every piece of machinery, the status of the latest customer orders, the trick to fixing an offset print run. And he knows all the workers by name. His boss, the owner of the factory, is Chinese, but it was clear that Ibrahim runs things.

Ibrahim started at the bottom. After secondary school he was, like many young Nigerian men, underemployed and surviving by working odd jobs. Because he grew up near the border with Niger, he speaks French. He found a niche buying cars from the

French-speaking Lebanese car dealers in neighboring Benin on behalf of Nigerians who were trying to take advantage of Benin's much lower auto import duties. In 2009 he got a job as a driver for Wang Junxiong, who was fresh from China and hoped to start a business in Nigeria. Ibrahim quickly morphed into a sort of all-purpose local fixer for his employer.

The key moment in their relationship came when Wang needed to buy a car for his fledgling company and wanted to do what the locals did: shop in Benin to bypass the high tariff. Ibrahim would have to do it, because Wang knew no French. But could Ibrahim be trusted with so much money? Wang's Chinese managers fretted. Finally, in a split-second decision, Wang locked eyes with Ibrahim and handed over the full amount for a brand-new vehicle, in cash. As Ibrahim left for Benin, Wang's Chinese employees shook their heads in disbelief, convinced they had seen the last of him and the money.

To their surprise, Ibrahim came back with the car—and change. He was full of apologies, however, because he had used some of the change to buy a pair of "beautiful shoes that could not be resisted." He insisted that it be docked from his next paycheck. From that day on, Ibrahim was Wang's right-hand man.

Soon he was running the day-to-day operations of the factory. Wang favored him so much that, unprompted, he came in one day with business cards identifying Ibrahim as "manager." The Chinese person with the same title was insulted. Ibrahim, wanting to keep the peace (and recognizing that he had de facto authority in any case), quietly stopped using the cards.

Without question, working in the cardboard box factory has transformed Ibrahim's life. In his tribe, men need a certain amount of money to get married; before he had this job, Ibrahim had no choice but to remain single. Now he has not one but two

wives (polygamy is accepted in his tribe), cementing his status as a rich man. And in his capacity as de facto plant manager, he brought his younger brother Ishmael into the business. Ishmael learned the ropes quickly and can now run the plant when Ibrahim is taking care of other matters for Wang. As I walked through the plant with Ibrahim, he spoke to the workers in Hausa, a northern Nigerian language rarely spoken in southwestern Nigeria, where the factory is located. But the workers weren't from the surrounding area—Ibrahim had literally brought his village to work.

Factory work will provide 100 million smart but underemployed and undereducated young people with an opportunity to move from informal, unsteady work into high-productivity, formal jobs connected to the global economy. With that opening comes even more potential.

Africa's New Generation

As Africans gain manufacturing experience, many of them will become bosses themselves. Such localization of ownership is driven in part by the nature of the manufacturing business, which continually strives for shorter supply chains to reduce costs and increase nimbleness. Wherever factories cluster, local suppliers spring up and scale up. National policies also play a role: Many government tenders advantage locally based manufacturers, and financing by country-level development banks is often available only to local companies, which encourages partnerships between locals and Chinese. In addition, foreign investors often prize local knowledge and seek out trustworthy local partners; the Chinese are no exception.

Meet Zaf Gebretsadik, from Addis Ababa. After graduating from pharmacy school, in the early 1980s, she worked as a pharmacist in a government hospital. In the mid-1980s the

drought and famine that made Ethiopia infamous worldwide hit the country. Gebretsadik joined a relief organization and then transitioned to researching pesticides.

In 1992 she decided to set up her own company. In her work as an agricultural researcher in a largely agrarian economy, she had witnessed the need for both human and animal medicines, and she saw a business opportunity in selling them. Ethiopia made very few medicines, so she decided to import them. She knocked on the doors of the Chinese, French, and Swiss embassies. Only the Chinese were responsive. With the help of their economic consular office, she managed to connect with multiple Chinese drug manufacturers and become their official representative for the Ethiopian market. Within two years she was winning big medical supplies contracts from the Ethiopian government.

A few years later one of the Chinese companies she represented in Ethiopia came to her with an intriguing proposition: They should form a joint venture to make gel capsules, the glossy casings for drugs.

Gebretsadik jumped right in. She put up the capital—essentially all her profits to date—for a 30% stake in Sino-Ethiop Associate Africa. Her company became the first and only gel capsule manufacturer in all of sub-Saharan Africa. Her expertise in the Ethiopian market and in navigating the Ethiopian bureaucracy was a perfect complement to that of her two Chinese partners: One specialized in pharmaceutical sales in developing countries, the other in gel-capsule manufacturing technology. Their plant was soon up and running and very quickly turned a profit. The company has increased its initial daily production of 2 million capsules to 6 million, with plans to expand to 11 million. It accounts for the vast majority of

Ethiopia's pharmaceutical exports, and its products are sold all over Africa and the Middle East.

Today Gebretsadik is the owner or co-owner of three companies employing some 300 people in all. She and other African entrepreneurs are doing what their counterparts in China, Japan, and the Four Asian Tigers have done: partnering with foreign investors and becoming manufacturing moguls themselves. Gebretsadik's story parallels Sun's: Working for and with foreign investors in China is how the current generation of Chinese factory bosses got their start.

When Gebretsadik reflects on the decision she made nearly 20 years ago to invest her life savings in a manufacturing plant, she doesn't dwell on business considerations. Although she was transitioning from a sales and marketing business that needed very little fixed investment to a manufacturing business with enormous fixed costs, her decision wasn't based on the economics or the business plan: "I wasn't sure I would make it financially," she told me. "But I have known these people since 1992. I really trust them. They are like family."

From Good Business to Good Institutions

Chinese businesses in Africa have often been accused of undermining the continent's institutional integrity. As the U.S. secretary of state, Hillary Clinton spoke for many critics when she characterized Chinese investment in Africa as a "new colonialism." Asked about China's rising influence in Africa during a 2011 TV interview in Zambia, she responded, "When people come to Africa to make investments, we want them to do well but also want them to do good. We don't want them to undermine good governance in Africa."

As noted, the record of Chinese investment in Africa isn't spotless. But many of the Chinese entrepreneurial ventures I

look at are working actively to build up African institutional capacity. By interacting repeatedly with governments and cocreating institutional innovations, these investors are taking the same approach they used in China to transform a Marxist economy with nonexistent market institutions into the second-largest economy in the world.

Qi Lin can tell you a lot about how this works. He started out as a hairdresser in a small town in northeastern China and then tried without much success to run a clothing shop there. He had grown up hearing stories about Africa from his grandfather, a doctor sent by the Chinese government to Somalia in a goodwill medical aid delegation in the years after the Chinese communist takeover. Qi wanted to see Africa for himself, so he hustled his way into a Kenya-based job with a Chinese heavy equipment company. Now he knows Nairobi's back streets as well as any local taxi driver, and he can utter greetings in more of Kenya's tribal languages than most Kenyans can.

After Qi moved to Kenya, his day job was selling lathes and milling machines—the powerful desk-sized equipment used to fabricate specialized parts for factories. But he quickly ran into a problem: No one in Kenya knew how to use the state-of-the-art machinery that his company sold. The country's vocational and technical education was at least a generation out-of-date.

Undaunted by the prospect of trying to fix technical education in an entire country, Qi's company partnered with the Kenya Ministry of Education and the Kenya National Youth Service, the two government departments that carry out most vocational training programs there. The company lowered its price significantly to supply the latest machinery to Kenyan vocational training centers. For two years Qi worked to install the machines in 10 centers, driving all over the country to check on electricity hookups and to meet with school principals. He

thought the hard part was over once the giant machines were in place, but they just sat there, barely used.

One day Qi was on yet another trip to check on a vocational school with Benard Shikoli Isalambo, an official from the Ministry of Education, when Isalambo had an idea. “You’ve given us huge equipment, but we’re not utilizing it,” he said. “If we have a competition to support this equipment, you’ll be helping us build the confidence of our students.” When they got back to Nairobi, they wrote a proposal, and Qi worked his internal channels to get approval for it. That idea turned into the Africa Tech Challenge, launched in 2014, which brings together students from all over Kenya for intensive training and a competition in industrial machining skills. Qi’s company now spends $500,000 a year on the effort as part of its corporate social responsibility program.

But did that solve the problem? Of course not. “When we were doing the ATC, something came out clear: Our instructors were worse than the students!” says Isalambo. Yet again Qi mustered his irrepressible optimism and problem-solving skills. He put together a small team of NGO workers and consultants to create a teacher-training center with his company and the Kenyan government. (I participated in this project for a summer during graduate school.) After two years of pushing and cajoling, the creation of the Sino-Africa Industrial Skill Upgrading Center was formally announced in July of 2016.

Qi’s story is an example of how Chinese companies are patiently forging a new institutional reality in Africa. Perhaps because government agencies and other institutions are very much under construction in China itself, Chinese companies are unafraid of incomplete and evolving institutions. They make things up as they go along—pivoting toward different local partners and adapting their plans to changing conditions. They

are open to the ideas of their African counterparts. At once relentlessly realistic and irrepressibly optimistic, they act without waiting for conditions to be perfect, and in so doing, they alter those very conditions.

There is a term for this process: *bootstrapping development,* which the Columbia social science scholar Charles Sabel describes as a means whereby imperfect institutions produce good outcomes by constantly learning about and adapting to market conditions. This dynamic, optimistic view of institutions emphasizes less what they are today than what they might become. As Sabel wrote, "If growth-favoring institutions are indeed built by a bootstrapping process where each move suggests the next, then such institutions are as much the outcome as the starting point of development."

Of course, these are the success stories; many attempts are less successful, if not downright risky. And the tendency for Chinese companies to work with African institutions as they are, rather than demand something better, may artificially prop up inept or irresponsible local governments, reinforcing the status quo rather than changing it. But institutions do not appear in the world fully formed; they must be used into existence. So companies must be willing to engage with them and give them a chance to improve.

Chinese companies are unafraid of incomplete and evolving institutions.

Stephen Knack, of the World Bank, and Nicholas Eubank, of Stanford Business School, studied the alternative—that is, when Western donor systems bypass local institutions. They found that "country systems are…undermined when donors manage aid through their own separate parallel systems." One major issue is that the parallel donor systems siphon off

valuable talent: “When donors bypass country systems they often staff their own…systems by ‘poaching’ the most talented government officials.” From this perspective, bootstrapping toward improvement looks like a far better strategy than insisting on something perfect from the beginning.

The Miracle of Manufacturing

As we sipped the eighth or ninth pour of his excellent tea at the ceramic tile factory, Sun waxed philosophical. “The train of development—which station first and then which station you need to go through—we Chinese know exactly what the path is,” he said. “Nigeria needs to learn from China!”

Sun is no economist, but he unwittingly hit upon a theory in development economics called the flying geese paradigm. Originating with Kaname Akamatsu and recently popularized by Justin Yifu Lin, it posits that manufacturing companies act like migrating geese, flying from country to country as costs and demand change. According to this analogy, factories from a leading country are forced by labor-price pressures to invest in a follower country, helping it accumulate ownership and move up the technology curve. This movement shifts the bulk of economic activity in the follower country from low-productivity agriculture and informal services to high-productivity manufacturing. The follower country eventually becomes a leading country, spawning companies in search of new production locations. The paradigm offers a convincing model of how Asian economies developed—in a chain from Japan to the Asian Tigers to China.

There is a second dimension to the flying geese paradigm: It describes not only the movement of companies from country to country, but also a process of industrial upgrading from product to product within each country. First a few companies show up

to try their hands at making a certain product. As they learn, their profits attract other manufacturers of the same product. But as the field gets crowded, intensifying competition and thinning profits, some companies look for something else to make—this time something slightly more complicated and thus harder to copy. As the cycle repeats, companies that started by copying and learning are inventing and teaching a mere generation or two later. An analysis of 148 countries shows that as GDP rises, manufacturers within a country predictably move toward ever more complicated products. In another decade or two, factories in Africa will be churning out computers instead of ceramics and clothing.

That's why investment in manufacturing is the key to Africa's development. Economists know that in the long run, the only way to create higher standards of living is to become more productive. Unlike services, which are often locally based and rarely achieve returns to scale, manufacturing becomes more productive over time, partly because its products often have to compete with imports or get exported to other competitive markets. In addition, manufacturing investment has big multiplier effects: Research shows that for every manufacturing job created, 1.6 service jobs follow. As Ron Bloom, President Obama's onetime senior counselor for manufacturing policy, put it, "If you get an auto assembly plant, Walmart follows. If you get a Walmart, an auto assembly plant doesn't follow."

To be sure, industrialization unleashes powerful forces for harm as well as for good, and these are already evident in Africa today. Bribes affect the proper functioning of local governments; poor environmental practices affect the quality of Africa's air and water; and mistreatment of workers determines not only their wages but sometimes whether they live or die on the job. China itself—with its corruption scandals and smog-

ridden air—offers ominous examples of the social and environmental consequences of unbridled economic expansion.

Yet another certainty is that Africa will experience industrialization differently. Its countries and societies don't resemble China economically, politically, or socially. Although building factories in any new place produces a host of predictable results—from rising incomes to labor scandals—their form, sequence, and flavor vary considerably. In Nigeria the course of industrialization is shaped by reports from a free press, in Lesotho by a strong union movement, in Kenya by tribal and ethnic considerations—all of which are largely absent in China. Indeed, in encounters between Chinese investors and local African actors—workers, suppliers, distributors, governments, media—new types of organizations, partnerships, and power structures will be invented. The theme may be old, but the story will be new.

CONCLUSION

Industrialization will allow Africa to follow in the footsteps of Japan, South Korea, Taiwan, and China: to build factories that employ its booming population and to refashion its institutions to meet the demands of modern capitalism. Most important, it will provide a real chance to raise living standards across broad sectors of the populace. If Africa could lift just half as many people out of poverty as China has in a mere three decades, it will eliminate extreme poverty within its borders. For nearly 400 million people, that would mean the difference between going hungry and being full, between scrounging for work and holding a steady job, between asking their children to do menial labor and sending them to school. The Chinese showing up in Africa today don't doubt that this will happen. As one of them, who is working to build a special economic zone in Nigeria,

said to me: “This is exactly like my hometown 30 years ago. If we could do it, then so can this place.”

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