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“Africa’s China”: Chinese Manufacturing Investments in Nigeria in the Post-Oil Boom Era and Channels for Technology Transfer

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ABSTRACT

**SAIS-CARI WORKING PAPER
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“Africa’s China’: Chinese
Manufacturing Investment
in Nigeria in the Post-Oil
Boom Era and Channels for
Technology Transfer”

by Yunnan Chen

THIS STUDY OUTLINES MAJOR CHINESE INVESTMENTS in Nigeria’s manufacturing sectors, specifically looking at their potential to foster industrialization and structural transformation. I examine technology transfer mechanisms that may catalyze transformation processes, employing structured survey methods to understand the drivers of Chinese outward investment in Nigeria as well as the challenges they face in-country. Though positive cases exist of technology and skills transfer from Chinese firms to the local economy, poor infrastructure, lack of skills, and low social trust are barriers to the development of linkages into industrial supply chains. For firms, political and exchange rate instability are consistently cited challenges, particularly in the wake of the recent economic recession; however, firms who have localized most successfully may be better prepared to weather these challenges.

INTRODUCTION

THE QUESTION OF HOW TO PROMOTE STRUCTURAL TRANSFORMATION is central to fostering sustainable growth and poverty reduction in low-income African countries, and a pressing concern for commodity exporters facing the challenge of volatile global commodity prices. Nigeria's oil-rich economy has faced grave economic impacts from the commodity price bust after 2014, however it remains a salient destination for foreign direct investment (FDI) from China for industry and manufacturing.

Since the 2006 Forum for China-Africa Cooperation (FOCAC), capital investment from China into African economies has accelerated, both from state-owned enterprises (SOEs), often supported by Chinese state capital and major policy banks such as China Eximbank, and from small and medium-sized private enterprises and investors. Along with Ethiopia and South Africa, which have attracted the largest volumes of Chinese FDI, Nigeria has been a major destination for Chinese FDI, not only for its energy sector, but also in its nascent manufacturing industries.

China's domestic economic slowdown has contributed to the "going out" of smaller, privately-owned manufacturing enterprises, often operating independently of the Chinese state. Domestic overcapacity and rising wages have hit the competitiveness of Chinese manufacturing, leading some economists like Justin Lin to predict that as China moves up the industrial ladder, it will free up thousands of manufacturing jobs to be offshored to other developing countries, generating the same 'flying geese' model in Africa that Japan did for East Asia.¹

Successive governments in Nigeria have tried to leverage these waves of investment to foster industrialization and structural transformation, recognizing manufacturing's economic potential as a sector for job creation, and reducing dependence on oil commodity exports. Many African countries have courted Chinese investors to build and develop industrial zones and manufacturing clusters. Ethiopia is one country that has pursued this strategy aggressively, developing industrial zones with Chinese partners across the country to foster emerging manufacturing clusters for textiles, shoes, and other products for export markets.² In this endeavor Ethiopia has consciously modelled China's own developmental experience, using special economic zones that offer preferential incentives to investors.

Building on previous qualitative studies, this paper evaluates the recent phase of Chinese manufacturing investment in Nigeria in the context of the commodity price boom and bust.³ Along with Ethiopia, Nigeria has been one of the top destinations for Chinese FDI and for small and medium sized enterprises in manufacturing.⁴ After the 2006 FOCAC, Nigeria was also among the first countries to join in Chinese partnership to host two 'economic cooperation and trade zones', which became the Lekki Free Trade Zone and Ogun-Guandong Free Trade Zone. This paper surveys the evolving context of Chinese manufacturing enterprises in Nigeria, identifying new emerging clusters of investment, challenges faced by investing firms, and evaluates the potential channels for technology transfer in the manufacturing sector, with reference to China's own domestic experience, and other African economies.

We found emerging manufacturing investment sectors centered around construction, real-estate industries, and household goods. Although many of these investments have been conditioned by Nigeria's import substitution politics, there are also some push factors involved. As older Chinese industries have been squeezed out of China by tightening environmental regulations, they have been looking to relocate to third market developing countries. We found many of the largest manufacturing investments have taken place outside of the major special economic zones in Lekki and Ogun, both of which have experienced challenges in their growth and development. Our interviews revealed several positive cases of technology transfer initiatives and skills training, particularly in non-homogenous product sectors such as furniture. However, linkages to domestic Nigerian firms and actors are low, hindering the development of industrial clusters and local supply chains. Other challenges such as the currency depreciation following Nigeria's recession in 2014 have been a major hit for foreign investors. Although, we did find that firms that were more localized were generally better able to weather these fluctuations and challenges, while traders and those importing raw materials were hardest hit.

These findings hold implications for Nigeria's use of manufacturing for structural transformation and economic diversification. It raises questions over the efficacy of special economic zones in spurring clustering and economic spillovers and reinforces the need for adequate logistics and proper management, both of which have been a struggle in Chinese-established industrial zones. And while there have been some limited channels of technology transfer in the form of skills training, firm-level transfers are minimal. Furthermore, most industries target the domestic, rather than the export, market in contrast to the Ethiopian model. The success of these initiatives is dependent on import-substitution policies that do not necessarily encourage productivity improvements and may not be sustainable in the longer-term.

BACKGROUND

CHINA-NIGERIA ECONOMIC ENGAGEMENT

HISTORICALLY, NIGERIA HAS EXPERIENCED SEVERAL 'WAVES' of immigration and investment from China. The first was in the 1960s, when a wave of Chinese immigration from places like Shanghai and Ningbo came to Nigeria after the Communist revolution.⁵ Four of the largest Hong-Kong Chinese corporations survive to this day, including Lee's Group and Tung's Group, both which invest in a wide-range of manufacturing and food industries. A second wave in the early 2000s brought an influx of Chinese capital and migrant traders; this time, with a push from the Chinese state through the 'going out' policy. Under President Olusegun Obasanjo (1999-2007), China and Nigeria deepened their economic and political engagement under the auspices of the 2006 FOCAC. Finally, many of the firms interviewed here belong to a third wave of Chinese investors, arriving after the global financial crisis and with a stronger tendency towards direct investment.

Nigeria was one of the African countries selected for six pilot economic trade and cooperation zones at the 2006 FOCAC, with two free trade zones ultimately established: one in Lekki, Lagos state, and one in Ogun state, a collaboration between the Ogun state and Guangdong provincial governments. These zones were designed with the intent of drawing Chinese investment and giving host governments an opportunity to borrow from China's experiences with Special Economic Zones.⁵ As well as official state-initiated zones, a World Bank report found Chinese enterprises establishing private industrial estates, including Hazan Shoe Park in Ogun and Yuemei Fabric Industrial Zone in Calabar, while other field studies also identified industrial clusters around Calabar in the Cross Rivers state in white goods and other appliances.⁷ These studies found low sectoral clustering and a consistent tendency among Chinese firms to avoid their competitors.

NIGERIA'S POLICY CONTEXT

THE NIGERIAN GOVERNMENT HAS LONG RECOGNIZED the need to diversify its economic base. Under the near-decade long commodity boom driven by oil exports, Nigeria's gross domestic product averaged 9 percent between 2003-2013. However, the fall in oil prices that began in 2013 into 2014 led to a deep recession and rapid devaluation in the naira in late 2014, during which the government exhausted much of its foreign reserves in its attempt to defend the exchange rate.⁸

Prior to the recession, the Nigerian federal government introduced several policies to promote domestic manufacturing and industrialization—most prominently the Nigerian Industrial Revolution Plan—as part of a strategy to diversify away from oil exports. Under previous administrations, it introduced a series of import substitution policies, using customs duties on finished and unfinished goods, as well as import bans, to stimulate domestic production; such products included furniture, cardboard, pharmaceuticals, and processed foods. The 2014 Automotive Policy introduced under President Goodluck Jonathan was an attempt to boost domestic car assembly plants by raising import duties on fully assembled cars from 10 to 35 percent, which had some tentative success in incentivizing international auto manufacturers such as Peugeot and Toyota to open assembly plants in Nigeria.⁹ More recently, the government has tried to stimulate domestic production of tomato paste and ketchup by limiting importers' access to foreign exchange.¹⁰

TECHNOLOGY TRANSFER AND STRUCTURAL TRANSFORMATION

CHINA'S OWN DOMESTIC EXPERIENCE LEVERAGING FDI, particularly manufacturing investment, is a powerful demonstration of how foreign investment can help generate structural transformation. China in turn has become a salient source of outward FDI, forming a potential channel for technology transfer to domestic African industries. Depending on the absorptive capacity of the economy and domestic firms' level of technology, the arrival of new innovations and ideas from

foreign and transnational companies can serve as a stimulus for domestic firms to adopt new practices and technologies.¹¹ Foreign firms can generate technology transfer through horizontal and vertical spillover mechanisms to the local economy.¹² Horizontally, skills and knowledge transfer can occur through labor mobility and ‘poaching’ of skilled workers between firms in the same sector. Vertically, backward and forward linkages in the supply chain can also be a channel where foreign firms can improve the management and technology of their domestic suppliers or vendors; in China’s experience, such backward linkages have been a potent source of technological upgrading and productivity gains.¹³ However, foreign firms can also operate as enclaves, with little connection to the local economy, competing with local firms for market share.

Table 1: Channels for Technology Transfer

Channel	Mechanism	Indicators
Horizontal Spillovers	<ul style="list-style-type: none"> *Poaching of skilled labor *Skilled labor moves or starts own companies 	<ul style="list-style-type: none"> *Industrial clustering *Localization of workers *Systematic worker training
Vertical Spillovers	<ul style="list-style-type: none"> *Forward and backward linkages *Productivity improvements 	<ul style="list-style-type: none"> *Localization of supply chain *Local vendors *Consistent supply relationships *Training & upgrading of suppliers

Source: Author’s elaboration

Table 1 above shows the broad channels and mechanisms that the technology transfer literature identifies, and the indicators that are necessary factors for these mechanisms to operate. The analysis looks at these indicators among the manufacturing firms surveyed, focusing on clustering, local linkages, technology transfer, and training processes.

DATA & METHODOLOGY

THIS PAPER DRAWS ON PRIMARY FIELDWORK OVER a two-month period between August and September 2017, during which I visited and interviewed 28 Chinese firms or investors, within two industrial zones in Ogun and Edo state. Using semi-structured interviews and corresponding survey questionnaires, I captured information on firms’ history, local linkages, investment motivations, employment patterns, and training practices. The study builds on previous scoping studies by previous scoping studies, prioritizing new regions and sectors of investment and cataloging new developments experienced by established firms in the intervening years.¹⁴

OFFICIAL CHINESE INVESTMENT STATISTICS

INITIAL DESK STUDIES BEGAN BY USING CHINESE OFFICIAL records, namely, MOFCOM's 2015 list of firm registrations. We then identified a total of 218 Chinese firms registered in Nigeria. Of these, 128 were identified as manufacturing-related enterprises. The Nigerian Investment Promotion Commission (NIPC) also collects firm registration data by nationality. Two versions of data were collected from the NIPC. The dataset from 2014 identified 215 companies registered from 2006-2012 as originating from China, of which 88 were listed as operating in manufacturing or production-related sectors. A 2017 update found another 157 firms from China registered between 2012-2017, of which 24 were listed in manufacturing. Updated data was used to identify and corroborate more recent investment clusters.

While official registration lists were taken as a starting point in identifying clusters and firms to interview, the comparative exercise between Chinese and Nigerian data sources illustrates the tenuous nature of official statistics in reflecting the reality on the ground and the conflicting disparities between data sources. As well as elevating the importance of fieldwork in ground-truthing data, these results illustrate the risk in depending on asymmetric or systematically biased sources of data.

Table 2: Registered Firms

	MOFCOM (2015)	NIPC (2006-2012)	NIPC (2012-2017)
Total Chinese firms registered	218	215	157
Manufacturing	128	88	24

SITE VISITS

FIELD RESEARCH VISITS COVERED INDUSTRIAL ZONES in four states: Lagos, Ogun, Edo, and Nasirawa (Abuja Federal Capital Territories). While many firms chose established free trade zones (FTZs), such as the Ogun and Lekki FTZs, many more Chinese firms preferred to buy or lease their own land, sometimes alongside other compatriots. Snowball sampling and contacts made with well-connected companies were used to identify and contact new firms. Regrettably, many firms explicitly refused to participate in interviews or grant meetings, often citing previous instruction from the China Chamber of Commerce earlier in 2017 that instructed them to refuse foreign interviews.¹⁵ The Economic Counsellors office in Nigeria declined interview requests, however members of the China Trade and Commerce Association and the Fujian Jiangsu Business Associations provided interviews and assistance with contacts.

Semi-structured interviews delved into the firms' history, motivations for investment, linkages with other Chinese and Nigerian firms, and modes of training for local workers. Firms further completed a questionnaire in Mandarin, in presence of the researcher, indicating the varying importance of certain investment factors. Appendix A contains a redacted list of the Chinese firms visited and a summary of firm responses.

CLUSTERS & INDUSTRIAL ZONES

LEKKI FREE TRADE ZONE

THE LEKKI FTZ IS SITUATED IN THE LEKKI PENINSULA, east of Victoria Island, Lagos. Established in 2006, it was originally a collaboration between the Lagos state and Jiangsu provincial governments. Currently, 60 percent of the zone's stake is Chinese-owned, split between the Chinese Civil Engineering Construction Corporation (CCECC), the China Railway Construction Corporation, and the China-Africa Development Fund. Zone development accelerated after 2014, when natural gas and electricity supplies were stabilized. Currently the zone hosts around 30 firms, both Chinese and Nigerian, with more than 10 in manufacturing. Yulong Steel and Yafei semi-knock down (SKD) assembly are two of the larger companies, with the rest still relatively recent entrants producing furniture and household consumables like mops, slippers, and wigs. The Lekki FTZ offers preferential policies including zero customs fees for imported raw materials and exported products, conditional on a 35 percent local content requirement for all firms, and a minimum US\$ 100,000 investment. The management company charges fees of around two percent.

OGUN-GUANGDONG FREE TRADE ZONE

THE OGUN FTZ IS ANOTHER FOCAC SPONSORED INITIATIVE, established in 2007. Originally a collaboration between the Ogun state government (with the endorsement of former President Obasanjo) and the Guangdong provincial government, Ogun FTZ started with three firms: Hexing Packaging, Hewang Cardboard, and Hazan Shoes. While the former two firms are still going strong, Hazan shoes has since shut down.¹⁶ Zone ownership is split 60:40 between Chinese and Nigerian actors. On the Nigerian side, 22 percent of the zone is owned by Ogun state and 18 percent by ZGM, a Nigerian firm who plays an intermediary role between Chinese and Nigerian investors. Management fees in the Ogun FTZ are set at 3.75 percent.

As of 2017, Ogun FTZ had 45 registered firms, with 26 active and operating. Some of the largest include Goodwill Ceramics, Hewang Cardboard, and Snowsea Freezers, as well as an SOE investment in a glass factory (under construction at the time). Ogun FTZ hosts three furniture manufacturers and two or three steel firms producing steel pipes and rivets. Like the Lekki FTZ, the Ogun FTZ has the same local content requirements and preferential tariffs on imported and exported goods. However, there

have been allegations of smuggling, linked to the zone's easy access to imports, which the previous management company, Zhongfu, struggled to suppress.

Ogun FTZ has been a point of contention in the transition between two zone management companies, where the assets of the Guangdong firm were allegedly appropriated from the previous firm, Zhongfu International, and transferred to new owners, New South Group (NSG), leading to significant instability in management for zone occupants.¹⁷

OTHER INDUSTRIAL ZONES

OTHER SITES WITH SIGNIFICANT CHINESE MANUFACTURING investments includes Calabar FTZ in Cross Rivers State, the oldest FTZ in Nigeria which was established in 1992 by the government. Unlike the two FTZs in Lagos and Ogun, there is no Chinese involvement in zone management. It is home to longtime steel manufacturer Baoyao Steel, several Skyrun enterprises investments producing white goods and household appliances, and a new SKD assembly plant owned by Chinese truck manufacturer F.A.W.¹⁸

Despite FTZ's preferential policies, large numbers of Chinese investors often choose not to locate in a zone, purchasing instead their own land for factory sites (sometimes in collaboration with a Nigerian counterpart), as is the case with larger enterprises like Viju Milk and CWay. Others have established their own private industrial zones, such as the Wihu zone, just outside of Lagos. Wihu produces plastic shoes and slippers; however, its primary business is as a zone management company, hosting a number of other small firms producing furniture, plastics, and import-export firms, many originating from Zhejiang or Wenzhou. This kind of ethnic clustering is common, as firms are more likely to cluster along linguistic and provincial lines rather than by industrial sector. Given the competitive environment overseas, having a common dialect or common home province helps facilitate social trust and cooperation between investors.

INDUSTRY ASSOCIATIONS & ETHNIC TIES

ALTHOUGH MOST BELONGED TO A MANUFACTURING ASSOCIATION, many firms were skeptical of industry associations and their benefits. Small manufacturers in the Lagos area tended to be involved in smaller trade and commerce associations, often tied to their Chinese province of origin, which served as hosts for charity and social functions as well as a commercial platform. There is a plethora of regional and provincial organizations such as the Guangdong association, which helps member Adonis Cutlery to source parts from home, the Fujian association with Time Ceramics as a member, and the Shandong association with Jingsi Wihu as a member. Fewer firms are members of Nigerian associations, seeing membership to organizations such as the Manufacturing Association of Nigeria (MAN) as a waste of money. Hewang Cardboard's Mr. Jiang complained, "they're dominated by the Indian and Lebanese."

Larger companies and those in higher-value product chains saw joining commercial associations as less necessary and more politically sensitive.

Some Chinese associations are remarkably democratic in their organization. For example, in 2017 entrepreneur Ni Mengxiao was elected chair of the Chinese Commercial Association (中国商业会), a general trade and commerce association with a highly active Wenzhou contingent. Mr. Ni runs two agricultural investments outside of Lagos as well as two plants manufacturing tissue paper and shoes. As head of the association, he acts as figurehead and first point-of-call for investors encountering trouble with local Nigerian actors or institutions.¹⁹ There is a constant refrain that for smaller firms and entrepreneurs, the Chinese embassy and counsellors office were useless—to quote Mr. Ni, “we have to do it all ourselves.”

Chinese associations have also doubled as cartels. In the wake of the oil price shock and an oversaturated market, the five major Chinese ceramics producers, led by Goodwill Ceramics, came together in 2017 to create an association. Through regular meetings and mutual monitoring, they agreed to restrict production, at first for a few months, and then finally each halving their production capacity to keep prices in the market stable. Goodwill’s Mr. Mei lamented about how new Chinese entrants were coming in and taking up slices of a limited pie, “If everyone is competing against each other, we all lose money.” Other firms in the furniture sector have formed their own sectoral association to raise their commercial power. The new association, Datang, consists of three companies all from one larger furniture company’s own investment group. The broader goal is to partner with Chinese furniture associations in China and “...to standardize the furniture market in Nigeria.”²⁰

Mr. Zhong, a former employee in the hair and wig sector, shared another case of cartel-like behavior. Mr. Zhong described how the Chinese wig manufacturers in Nigeria were able to cooperate after Nigerian wig associations, threatened by competition, tried to lobby the MAN to price Chinese firms out of the market, allegedly shutting down a few small firms for minor infractions. The Chinese firms sought aid from MOFCOM to mount a legal challenge against the Nigerian wig manufacturers and won. A second strategic response by the sector was a coordinated production shutdown by association members. Representing 80 percent of the market, this effectively shut down the Nigerian supply of hair and wigs.

Ultimately, however, these cases illustrating coordination between firms in the same sector are an exception. Many sectors were simply too competitive to establish associations. The packaging sector was a prime example. According to Hexing’s Mr. Zhang, while explaining why they were not part of an association, “everyone will just be out for themselves.” Attempts in the plastics sector to form an association also fell through as firms did not have the mutual trust to coordinate. Meanwhile, Gudy Foods, which produces packaged cakes, attempted to coordinate a price increase with other Nigerian firms, given the rising cost of raw materials, but despite agreements, “in the end, everyone did their own thing.”²¹

Table 3: Emergent Chinese Investment Sectors in Nigeria

Sector	Sub-Sector	Observations	Select Firms & Location
Construction Materials	Ceramics	Mostly tiling, 7-8 firms.	WEMPCO (owned by Tung Group) Goodwill Ceramics (Ogun FTZ) Time Ceramics (Benin City)
	Steel	Steel bars, pipes, rods, and beams	Far East Steel (Ogun FTZ) Pannda Steel (Ogun FTZ) Baoyao Steel (Calabar FTZ) Yongxing Steel (Benin City)
Furniture	-	10-20 firms, most factories in Ogun State	Discovery Furniture (Ogun FTZ) Winghan Furniture (Ogun FTZ) Lifemate Furniture (Ikeja)
Food & Beverage	Drink & Beverage	-	Viju Milk (Ogun State) CWay (Ogun State)
	Food	Snack cakes	Gudy Foods
Beauty Market	Hair & Wig Products	At least 20 Chinese artificial hair & wig firms, make up 80% of Nigerian market	Rebecca Hair
Cardboard & Plastic Packaging	-	10-20 Chinese firms	Hexing Packaging (Ogun FTZ) Hewang Cardboard (Ogun FTZ)
Assembly Line Plants	Shoes	-	-
	Household Appliances	White goods & small electronics	Skyrun International (Calabar FTZ)
		Freezer assembly plant	Snowsea (Ogun FTZ)
	Vehicles	SKD trucks & vehicles	Sinotruck - 20% of Nigerian market (Lekki Zone) Yafei Trucks (Lekki Zone) FAW (Calabar FTZ)

INVESTMENT MOTIVATIONS

DISTINCT ‘GENERATIONS’ OF INVESTORS EXIST AMONG Chinese manufacturing enterprises including the “big four” Hong Kong family firms (including Lee’s Group and Tung’s Group) that survive from the 1960s, the second wave of trade and import entrepreneurs from the mainland from the 1990s and early 2000s, and a post-2008 set of entrepreneurs who invested with intentionality, choosing sectors and products for their market potential, rather than based on their own experiences.

Some of the largest established Chinese firms we surveyed were ‘second-generation’ traders who later became investors. This group is characterized by the furniture sector, where the owners of Lifemate Furniture and Dynasty Furniture both came to Nigeria at the turn of the millennium, trading in machinery and equipment, and in textiles and furnishings, respectively. Prior experience with the Nigerian market through trade gave them familiarity with the domestic market. Dynasty Furniture’s Mr. Wen decided to invest in manufacturing wooden furniture after many years exporting textiles and upholstery fabrics for furniture, spotting a

niche in the market. Particularly after the global downturn in 2008, many entrepreneurs switched from trading to investing: in the case of Mr. Wen, he realized that “Chinese traders have no *youshi* [advantages] against a Nigerian trader.”

Many other investors from this era were invited over by their local clients. CWay is a prime example. CWay’s owner, Mr. Onest Che from Dalian, originally exported water dispensers but came to Nigeria in 1999 after being invited by his local clients and decided to invest. Mr. Che’s Nigerian clients later became his distributors. Others were invited by Chinese friends, often along ethnic and provincial linkages, who brought them to scope out the market (*kaocha*) and encouraged them to invest, sometimes jointly. Goodwill, the largest ceramics producer in Nigeria, was brought into the market by their provincial compatriots Viju Milk, and both chose to locate in Ogun state. This has been a predominant mechanism for cluster development in Ogun and Benin City.

PUSH FACTORS

FOR THE MOST RECENT WAVE OF INVESTORS, GROWING competition in China and worsening economic conditions have been the most salient push-factors that incentivized them to come to Nigeria. The global financial crisis hit traders particularly hard, and a number of firms, including Yongxing Steel, cited the downturn that followed as their reason for investing in manufacturing in Nigeria, where the profit margins were “incredible”. Similarly, Mr. Huang, who came to Nigeria in 2009 and has multiple manufacturing investments, noted that, “the [global economic crisis] hit our export business hard. So, we decided to follow the lead of our Nigerian client, and just two of us came over. We saw a big market here for luggage, and so we came.” After establishing a suitcase and bag factory outside of Lagos, Mr. Huang brought over friends from the same county in Fujian to co-invest in a ceramic tiles plant, choosing to buy land outside of Benin City. Subsequently they opened a factory for sheet glass, a small aluminum door factory, and plan to expand to bathroom fittings, forming an industrial cluster for home fittings and construction materials.

Firms also cited environmental regulations in China as a factor in going out, particularly in energy-intensive or polluting products such as ceramics and plastics. The owner of Sun Ceramics described how in China he made ceramic tiles similar to those produced by Goodwill. “There used to be dozens of companies making these products [*in China*]. Now there are only three.” Strict environmental regulations made production increasingly difficult, forcing him to spend up to 10 million RMB on technical upgrades to comply with regulations. Similarly, Jingsi, a corrugated plastics manufacturer, moved to Nigeria after regulations shut down their industry in China—now, they operate solely in Lagos. Other industries such as Weiyang Marbles, also noted how competition and overcapacity in China in their sector pushed them, and other industries using low-level technologies considered redundant (*taotai*), out. Many of these ‘sunset industries’ have decided to offshore to developing economies such as

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Nigeria, where these *taotai* technologies are still considered competitive compared to local firms.

PULL FACTORS

BEYOND THE COMPETITIVE PRESSURE IN DOMESTIC Chinese markets, the growing middle-class market in Nigeria is a big draw for Chinese firms investing overseas. Many cited the large consumer market in Nigeria as a factor, compared to other African countries. Even some firms that still operate in China, such as Discovery Furniture, claim that overseas markets are now *more* lucrative.

In our firm surveys, above other factors such as low cost of raw materials or policy incentives, ‘market potential’ was consistently ranked the most important factor by manufacturing firms. Unlike other countries where Chinese manufacturers have invested for export incentives, such as the African Growth and Opportunity Act which has been shown to have a large impact on Chinese exports doing transshipment, in the case of Nigeria for the vast majority of firms the primary market was domestic. “The market is so big here, there is no need to export,” said Gudy Foods’ Mr. Sun. For many firms, having a background and expertise in a sector is secondary to market opportunities when it comes to decisions around manufacturing. Coming into the Nigerian market, the owners of First Battery chose to produce a new product, vehicle batteries, despite a background in steel production in China, because they saw a niche in the market. Similarly, Gudy Foods chose to produce cakes as they saw it as a new market not yet saturated by other Chinese investors.

Goodwill Ceramics profited from early-mover advantage, despite choosing to manufacture a product they had no experience in. In China, Goodwill originally made diverse goods including leather, steel, and chemicals. Following the lead of the Tung group, Wempco, Goodwill was one of the earliest Chinese entrants in the ceramics market, opening a plant in 2011. Goodwill has since become the largest ceramic tile producer in Nigeria, with spin-off factories in Ghana, Tanzania, and one under construction in Uganda. Despite the first three years of huge profits, however, new entrants have increasingly saturated the ceramics market.

POLICY INCENTIVES

PREFERENTIAL POLICIES, FROM BOTH THE CHINESE and Nigerians, have had some limited influence. Nigerian import substitution policies around automobiles brought SKD automobile assembly plants into the country, including truck manufacturers such as Yafei. Older policies like import bans on shoes and furniture also played a role in stimulating Chinese investments in these areas. One prominent Chinese investor, Ni Mengxiao, moved his shoe factory assembly line from Wenzhou to Lagos in response to these import bans.

In terms of preferential policies from the Chinese government, very few private firms we interviewed had had any interactions or had gained any incentives from the

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Chinese government. Although, on the provincial level, some firms noted preferential policies to help firms investing overseas. Guangdong province was noted as providing incentives to its local firms with the annual Guangdong trade convention commonly cited as an important platform for investment opportunities. Henan was another province some firms mentioned had offered preferential policies and subsidies to native firms. “Henan is a poor province,” Snowsea Freezers, a Henanese firm, noted, “not much industry there like on the coast, so they try to support firms going out that are successful.”

The Belt and Road Initiative (BRI) has had little material impact for most firms in Nigeria, but the rhetoric has been a powerful signal for investors. Hewang Cardboard and New South Group, both located in the Ogun FTZ, have invested in new industrial zones under the banner of BRI. Hewang’s owner wants to open a ‘Belt and Road’ industrial park near Itori. In reality, the BRI offers few incentives for small, private-sector manufacturers. One respondent lamented that “SOEs get all the benefits!” Zero-interest loans were available, but only for companies investing over 500 million RMB, disqualifying the vast majority of small private firms.

Relationships with MOFCOM on the ground were varied. Higher-value firms such as Yafei Trucks responded positively, “if you need their help, you can count on them.” The MOFCOM office had helped Yafei connect to the Kano state government for a contract to supply agricultural equipment, for example. Weiyang Marbles also noted that MOFCOM had helped to introduce them to industry conventions, through which they represented Nigeria’s mining sector at an event in Tianjin. However, for the most part, manufacturing firms interviewed had little interaction with MOFCOM. Aside from major incidents—kidnappings being a frequent example—business associations were the main port-of-call.

Our survey indicates that incentives from the Nigerian host government were ranked as more important in investment decisions than Chinese government policy incentives. Nigeria’s import substitution policies have had significant effects in stimulating investment in selected sectors. Besides direct import bans, the government also restricted access to foreign exchange for certain products, thereby limiting their import. These policies have also played an influential role in incentivizing Chinese investment in certain products, such as the case of tomato paste, which has stimulated firms like Discovery, which manufactures chairs, to invest in a new tomato paste processing plant. In the case of tomato paste, a combination of poor agricultural productivity and lack of upstream suppliers have been serious constraints to the sector’s development, however. Some protectionist initiatives appear to make little economic sense, as Hewang’s Mr. Jiang jokes about import bans on cardboard, “why are packaging imports protected when there isn’t enough supply to satisfy local demand? Because (President) Obasanjo has a [cardboard] factory.”

At the state level, Nigeria’s state governors also wield significant discretion to provide incentives for industrial development. For example, the state of Edo has been proactive in attracting investment by reportedly restricting glass imports into the state to protect domestic glass manufacturing, directly incentivizing a sheet glass plant

TECHNOLOGY TRANSFER

investment from Chinese firm Time Ceramics and allowing for an emerging cluster of other Fujianese investors to locate in Benin City. A liaison from the China Chamber of Commerce commented on the usual occurrence of bargaining with Nigerian state governors to gain preferential policies in return for investment in particular states. Perks included reduced utility fees, tax incentives, and even free land. Though the interviewee would not name examples, he pointed to the significant discretionary power state governors had in determining investment policies.

WHILE WE FOUND SOME SIGNIFICANT CASES OF SKILLS TRANSFER and training initiatives within firms, it varied widely between product sectors. The lack of a rich industrial ecosystem for parts and products also limited the leverage and pressure Chinese firms could put on local suppliers, and many of these relationships were fairly shallow. True joint ventures between Chinese and Nigerian investors were also rare. While technology spillovers are occurring, there is still more to be done to leverage them.

HORIZONTAL SPILLOVERS

LABOR TRAINING AND SKILLS TRANSFER

ASIDE FROM A SMALL NUMBER OF NEW FIRMS THAT HAD not yet hired staff, field interviews found high ratios of local employment at almost every Chinese firm we interviewed, further refuting the popular notion that Chinese companies import their own labor force. In the case of Lekki FTZ, the zone management company noted that on average, firms in the zone had a labor ratio of around 70 percent local Nigerians, and the firms sampled during fieldwork had on average an 83 percent locally hired labor share. In the case of the CCECC, an SOE and contractor for many of Nigeria's new infrastructure projects as well as part-owner of the Lekki FTZ, they have an explicit localization policy employing staff on a ratio of 10:1 local to Chinese.

INFORMAL TRAINING

INFORMAL, 'SHOW AND TELL' TRAINING IS COMMON AMONG many firms. Almost all firms used "hands-on" (*shoubashou*) training to instruct on health and safety, machine operation, and production processes on the job. New Watson Time doors, rather than doing the training themselves, hired specialists from Zhejiang at the same time that they purchased the machinery for their production line. These specialists then came to Nigeria and trained their local staff on the equipment, after which the workers would train each other.

Production line training to operate machinery also conducted on-the-job training, but the level of skills transfer varied based on the product manufactured. Many of the assembly-line plant investments, such as white goods, require basic parts assembly training without deep knowledge of how they are manufactured. Some respondents were very open about the limited nature of skills transfer, “Most of this work requires no skill!” the manager of Gudy Foods declared on their plant, “the machines are all automated.”

More customer focused industries and larger enterprises entailed more structured training, however. One company, 3C Hub, now one of the largest retailers of Chinese cellphones in Nigeria providing hardware service and maintenance for Nigerian consumers, trains locals via apprenticeships to learn to use computer systems and provide customer services according to the Chinese firm’s standards. CWay, as a larger multinational company looking to compete with western firms, has sought external training to standardize their staff training and wider company operations to meet global standards.²²

Furniture is one sector, where, over time, production skills and responsibilities have shifted entirely to local staff. For example, the sofa production line at one company “used to be completely Chinese, now we have many locals who have mastered these skills.” Dynasty Furniture is another case. In the seven years since Dynasty initially invested in Nigeria, the production line has become entirely Nigerian run, without the need for Chinese technicians, although Chinese staff still play a supervisory role. The relative complexity of the production process entails a longer, two-year training period. But at Dynasty, workers are incentivized to stay on and maintain their skills within the company with six months raise. A respondent from First Battery also referenced the same six months raise strategy in their labor management. Training workers is a high-cost process due to the sunk cost of forfeited products as workers make mistakes and learn from them, “If I hire new people, then they go through the process of making the same mistakes, it costs me even more money,” the manager explained, “so we want them to stay”.

Newer investors are taking technology transfer more seriously. Sun Ceramics is a recent entrant in the ceramics market and although they produced tiles in China, in Nigeria they have had to differentiate themselves in a competitive market. Sun Ceramics plans to produce ceramic wares—plates, crockery, household items—and the relatively complex nature of these products entails significant potential for training and skills transfer. The manager explained how the production chain for these goods entailed 20 different steps in curing, drying, and glazing the ceramic wares. Although as of 2017 the plant was only partially constructed, over a dozen technical staff had already been hired to start training locals; the firm also hired two staff from the Confucius Institute in Lagos to translate for training purposes and were looking to hire more.

Foreign firms can generate technology transfer through horizontal and vertical spillover mechanisms to the local economy. Horizontally, skills and knowledge transfer can occur through labor mobility and 'poaching' of skilled workers between firms in the same sector.

Our survey indicates that incentives from the Nigerian host government were ranked as more important in investment decisions than Chinese government policy incentives. Nigeria's import substitution policies have had significant effects in stimulating investment in selected sectors.

FORMAL TRAINING PROGRAMS

THE CONFUCIUS INSTITUTE IN NIGERIA, FREQUENTLY mentioned by interviewees as a prominent source of training, now comprises two universities, with one department at the University of Lagos and another at Nnamdi Azikiwe University. Although the Confucius Institute refused requests for interview, almost all firms interviewed, including Yafei Trucks, Lifemate, Time Ceramics, and New Watson Time, mentioned they had hired trained translators from there. Indeed, the current supply of institute-trained graduates were highly employable and seemed to barely meet the growing demand.

Some firms also mentioned attempts to set up training programs. One furniture company had previous plans with the Confucius Institute in Lagos to jointly set up a vocational training center to offer certified courses. However, the manager explained how this initiative fell through due to a lack of market demand, “Chinese value education and will spend money to pay for training and education. Here people don’t have the money. Poor people are too poor, and the rich people don’t need it.” Goodwill Ceramics, together with Viju Milk, also had plans for training programs, where they planned to bring someone from Beijing Foreign Studies University to train their staff on China-Africa relations; however, due to economic problems on Viju’s side this initiative also fell through.

One case of a successful firm-led training school is by the CCECC, who has built facilities for railway staff training as part of their campus in Abuja. CCECC provides specialist courses for engineers on topics like construction processes and signaling systems. The school has run a number of courses for new staff on the newly opened Abuja-Kaduna Standard Gauge Railway line, completed by CCECC in 2014, and has more recently started offering courses for staff on the planned Abuja Light Rail project. The facility is not a full-time institution, however, and courses are usually short-term, based on government demand.

Several firms have also taken advantage of links with local universities and Nigerian government initiatives such as the Industrial Training Program (ITP) and Nigeria’s National Youth Service. Several Chinese firms hired employees from the ITP, where students in engineering and other vocational subjects spend one-year interning in a firm. Dynasty Furniture’s manager recalled a student he had hired from the ITP during her second year at university. She returned to their company and eventually became a sales manager responsible for three storefronts. Lekki FTZ’s management company, as well as other firms within the zone, have also hired university ITP graduates. Nigerian students undergoing mandatory National Service can also elect to work with a particular firm, and a few firms, from smaller ones like Gudy Foods to SOEs such as CCECC, have hired from these cohorts—one CCECC manager in the Business Development department began working with the company during his National Service.

LABOR MOBILITY

MANY FIRMS NOTED A HIGH DEGREE OF LABOR MOBILITY. This was especially the case in the steel and ceramics industry, where there are a large number of factories and workers with transferable skills that are able to ‘hop’ between the two. Goodwill Ceramics noted a high turnover problem, “we trained many staff and lost them to other firms,” said Mr. Mei, “they give them a slightly higher wage and they run off.” For the most part, firms accepted this reality, comparing it to similar trends in China, and did not see it as a big threat to their business. There are some cases of inter-firm poaching—the manager of Discovery Furniture noted how some workers trained in machinery maintenance would move to other firms. Likewise, respondents from CWay also admitted to poaching workers from other firms—though in their case, they avoided poaching from Chinese firms, instead recruiting from larger multinationals including Coca Cola.

Despite this labor mobility, we came across very few cases of ‘spin-off’ companies—i.e. former local employees becoming entrepreneurs. A few exceptions were Hewang Cardboard, where general manager Mr. Jiang noted that one of their Nigerian clients had bought the same machinery and was starting their own production line, though in a different state. Dynasty Furniture’s Mr. Wen also noted a few of his locally hired staff going on to open their own retail furniture stores and one former factory line employee went on to specialize in making sofas. Most of the firms interviewed appeared skeptical of the idea of spin-offs, and indeed a primary problem for most Nigerian workers was a lack of access to capital, limiting both the prospects and likelihood of spin-off investments. Gudy Foods’ Mr. Sun argued there was a higher likelihood of Chinese laborers, not Nigerian, setting up their own company. Yanuo Luggage’s Mr. Chen commented on the cultural contrast, “Here every year [the workers] ask for a raise,” he said, “in China, workers don’t ask for a raise. But the worker might leave... and next year he sets up his own factory to compete with yours!”

VERTICAL SPILLOVERS

A KEY CHANNEL IN THE TECHNOLOGICAL UPGRADING PROCESS is made up of spillovers through industrial supply chain linkages including forward linkages, to retailers and markets, and backward linkages to suppliers.

FORWARD LINKAGES

WE FOUND MANY FIRMS IN NIGERIA WITH FORWARD linkages, through downstream wholesalers and local distributors. For example, smaller firms such as Adonis Cutlery sold indirectly to the market through Nigerian distributors, while larger companies such as Lifemate sold directly through retail branches. A common trait was a reliance on local staff for the sales and retail side, presenting a Nigerian face to Nigerian customers.

Furniture is one sector, where, over time, production skills and responsibilities have shifted entirely to local staff. For example, the sofa production line at one company "used to be completely Chinese, now we have many locals who have mastered these skills."

Most firms sold primarily to the domestic market and those that exported were limited to regional markets in West Africa, and primarily to neighbors, Benin and Cameroon. For larger firms, exporting was less important. For example, although CWay sells other beverages to West Africa, CWay water's primary market is domestic, currently occupying 85-90 percent of the Nigerian large water container market. Rather than export, CWay's growth strategy relies on opening a plant in target markets and incentivizing new managers with an equity share in the new investment.

BACKWARD LINKAGES

MANY FIRMS IN THE MANUFACTURING SECTOR SOURCE raw materials locally. This is most prevalent in sectors where raw materials are bulky or expensive to ship, such as the lumber for furniture or clay to make ceramics. Dynasty Furniture claims 50 percent of their materials are sourced locally, including lumber, cotton, synthetic stuffing, and fabrics, while each ceramics firm has their own quarry for mineral raw materials. Time Ceramics' Mr. Huang described how the incentive to source locally was not a matter of cost *per se*, but of time. They could source the same materials from China at a comparable or even lower cost, but the time saved from shipping bulky goods and clearing customs allowed greater flexibility to respond to market demand.

Backward linkages can be a potent mechanism for local firms to upgrade technologically through supplying foreign firms, however, cases of this occurring were exceptions rather than the rule. Several firms noted problems with the quality of their local supplier. The response was often to switch suppliers if standards did not improve and relationships were largely transactional and shallow. Discovery's manager explained, "we aren't specialists and we're not the same industry; we can't always help them with their products." Instead of relying on local suppliers, firms like Hewang chose a vertical integration strategy setting up their own paper mill, Da Hua paper, to directly supply their cardboard factory and ensure a quality supply chain. Likewise, CWay created a separate plastic bottle factory to supply packaging. In the ceramics market, having surveyed for minerals and raw materials prior to investing, Time and Goodwill both had their own secured supply chain, partnering with local actors to manage the quarries and supply each factory according to their specifications.

Dynasty Furniture is a case of a firm working directly with their supplier to improve quality. The manager explained how they worked with their cotton-stuffing supplier to address consistent quality issues. Dynasty reiterated their required standards to the supplier and hired an intermediary to conduct quality control. Afterwards, quality began to improve, and the supplier has now grown to supply other furniture firms. Dynasty has also worked with their wood and lumber suppliers to expand production. Since the suppliers lacked the capital to expand their lumber capacity, Dynasty helped them with an initial capital investment to buy larger batches of lumber and thereby increase scale.

However, a common complaint among firms centered around Nigeria's general low level of technology. Essentially, this means many firms depend on importing

inputs from China. “Many companies can’t find local suppliers, sometimes the prices are higher than imports,” noted Hewang Cardboard’s manager. For Adonis Cutlery, the lack of an industrial ecosystem for supplies and parts was a major obstacle. Key materials for production, such as stainless steel or niche plastic parts, still had to be sourced from China, inhibiting the formation of backward linkages.

JOINT VENTURES AND LOCALIZATION STRATEGIES

FIELD RESEARCH FOUND VERY FEW CASES OF EXPLICIT joint ventures (JVs) between Chinese and Nigerian parties, outside of the FTZ investments themselves. Though respondents had heard of JVs occurring, there were few they could name that were still in existence. In Lekki FTZ, only one small plastics firm, PPCM, was a JV (the firm did not grant an interview). However, many firms tacitly acknowledged that they had Nigerian investors in silent roles. Some investments are JVs insofar as the Nigerian investor manages land acquisition, while the Chinese stake entails the actual managerial decision-making. Few firms, however, openly shared these details. In the case of one construction-oriented firm, the company had several investments with different splits in ownership. One plant was split 80:20 in favor of Chinese investors, but another prospective investment, still under construction, had a planned 50:50 split.

Even so, many Chinese viewed JVs with some distrust and cultural trust issues were certainly salient. Some successful cases, such as the example of Wihu, were based on intermarriage rather than business relationships. Mr. Chen of Yanuo Bags, a Fujianese group investment, joked, “it’s hard enough for two Chinese from different regions to have the trust to jointly invest—let alone a Chinese and a Nigerian!” Indeed, the industrial zone outside of Lagos that his firm occupied was spatially divided between Chinese and Nigerian ownership, but “when [potential investors] find out one side is Chinese-owned and one side is Nigerian-owned, they always choose to invest with the Chinese owners.”

Though JVs are not always possible, many firms have sought to localize their labor force in other ways: CCECC’s policy of a 10:1 ratio between local and Chinese staff is an example of this. With FTZ management firms, there is also a notable difference in the corporate management of the Ogun and Lekki FTZs. Both were established through FOCAC initiatives, but Lekki FTZ’s current management company is highly localized, with a 50:50 split in zone management between Chinese and local Nigerian staff. In the Ogun FTZ, on the other hand, the relatively new management company, New South Group, is predominantly Chinese. Many firms expressed the desire to localize, given the obvious economic savings, but this comes with challenges. “We want to promote them!” said Goodwill Ceramics’ Mr. Mei, “But very few are able. We want to localize; we don’t have enough Chinese to manage everything.”

CWay was perhaps one of the most localized firms visited. Mr. Chen described an explicit local hiring policy, as Chinese staff were too expensive. One consequence has been not only greater hiring of local Nigerian staff, but also Indian staff, who have

additional advantages of having the requisite skills, good English ability, as well as lower salary demands than their Chinese equivalents.

HARD TECHNOLOGY TRANSFERS

A FINAL CHANNEL OF TECHNOLOGY TRANSFER IS THE SALE or transfer of machinery and equipment between Chinese and Nigerian firms. Chen *et al.* find this to be a salient form of technology transfer for domestic Nigerian manufacturers, where Nigerian firms buy Chinese equipment that come with both a technology partnership and training on the production line.²³ While this study focused primarily on Chinese firms, we found cases where Chinese firms had provided these benefits for other Nigerian firms in their industry, usually in sectors where Chinese firms were new entrants. Weiyang Marble is an example of a firm in an industry that is still primarily dominated by Nigerians. Weiyang's Mr. Shuai noted that local Nigerian firms had come to them for help fixing their Chinese-bought equipment and to borrow parts. Gudy Foods' Mr. Sun also related a similar case where, as relatively new entrants in the cake and dessert sector, they had allowed Nigerian peers in the sector interested in purchasing Chinese machinery to come and view their production line, demonstrating their newer production technology.

FIRM CHALLENGES

POLITICAL ECONOMY

WHILE POLITICAL INSTABILITY AND CORRUPTION were frequent complaints for many firms, political change and democratic transitions also entailed policy uncertainty for investors. Weiyang Marble complained, "you can't make plans in this country, everything changes all the time," a sentiment echoed by many interviewees expressing a latent disdain for democratic politics. A common perception was that China's own economic success was owed to its one-party system, and most respondents were skeptical of Nigerian politics. "We don't take part in local politics," one furniture firm commented, "We avoid it... when commerce and politics walk too close, there will be trouble in the future."

"Corruption is a very big issue," commented Zhongfu's Ms. Ke, "if you want to do things the legal way, others don't, and they will make it difficult for you." In the FTZs, due to their role in approving goods coming in and out as well as common hold ups leaving the zone to extract customs fees, customs and the Nigerian Export Processing Zone Authority seemed to be the biggest obstacles to Chinese firms. Discovery Furniture described how a single order for 50,000 chairs from one of Nigeria's largest churches was held up at the gate by customs despite being made up of 100 percent local content. Due to the pressure of meeting the client's deadlines, Discovery ended up caving to the customs offices' demands. "We lost a lot of money because of that," sighed Mr. Jin, "everyone has to give something eventually."

Rather than supporting businesses, firms perceived government bureaus as being out to get them. For example, the Nigerian environmental agency and the Standards Organization both used regulations to pressure firms for fines, sometimes halting production. “A huge band of them will come for money,” the respondent from Yanuo Bags described, “they want you to have issues so they can fine you for them.” Likewise, Dynasty Furniture had taken legal measures to defend themselves against the tax office, who they alleged was deliberately mis-reporting the number of Chinese employees Dynasty hired in order to charge higher levels of income tax. There was a common feeling of resignation that came along with these complaints. “You can’t avoid the fines,” said Dynasty’s Mr. Wen, “you can only negotiate the cost.” Still, many investors remained optimistic. One interviewee saw it as a “phase”, comparing Nigeria to China’s experience in the 1980s, one it would eventually grow out of.

Security issues were also frequently cited challenges, mostly in terms of their economic costs to businesses. Fear of kidnappings, for example, entail high security costs for firms and make it difficult to attract other firms and investments. Resurgent conflicts in the Delta region have indirectly impacted major companies in Ogun FTZ, most notably Goodwill. As natural gas supplies were cut off during the conflict, Goodwill was forced to spend substantial resources to supply its own electricity for a year.

Poor quality infrastructure, particularly roads, was another serious problem, particularly for firms in the Ogun FTZ. The Ogun state government has done little to resolve the issue and much of the road maintenance has fallen to larger firms like Goodwill, where the delicate nature of the ceramic tiles they produce directly links their success to decent road surfaces. Road problems have added to existing logistical challenges, including it sometimes taking four to five days to get a container from the port at Apapa, Lagos to Ogun FTZ. The cost of inland transportation and clearing customs, some firms noted, were sometimes higher than the cost of the raw materials themselves.

MACROECONOMIC ISSUES

ALMOST EVERY COMPANY NAMED CURRENCY FLUCTUATIONS as one of their most serious challenges. The fall in global oil prices that sent Nigeria’s economy into recession also halved the value of its currency, which tumbled from 150 naira per dollar in 2013, to close to 500 naira per dollar in 2015—at least at the black-market exchange rate. The official rate was kept at 199 naira per dollar until the Buhari administration allowed it to float in mid-2016 but attempts to stabilize the naira led to a credit crunch, ultimately limiting private firms’ access to scarce dollar reserves.

Some firms, such as Yafei Trucks, got around the exchange rate impacts by keeping their contracts in US dollars. For smaller firms like Jingsi Plastics in the Wihu zone, who converted their earnings to RMB, it effectively halved their profits. Adonis’ manager lamented on how the exchange rate crisis essentially meant they, “lost a factory’s worth of investment”. In addition, the exchange rate crisis had a deterrent

effect on other investors, including one supplier Adonis had tried to persuade to invest in Nigeria, but who changed their mind after the naira's crash. The impact of the currency depreciation was worse for companies that imported their inputs, dramatically raising the costs of production. CWay noted that the beverage side of their company, where 80 percent of raw materials came from China, was hit the hardest. While companies that localized their production chains were better able to withstand these shocks, import-export groups and traders were worst off.

Currency restrictions also existed on the Chinese side, where limitations on outward capital flows have also posed an obstacle to some overseas investors. Restrictions on transferring RMB to dollars was a particular problem for 3C Hub their first years in Nigeria, where they expanded rapidly, but were unable to get stock over from China fast enough. A few firms alluded to backdoor means of transferring capital. Time Ceramics simply commented that, "we have our own methods of getting money home." Firms that had borrowed from Nigerian banks, and those that started in trading, were able to use naira domestically in their investments and avoid this obstacle.

CONCLUSION

CHINESE DIRECT INVESTMENT IN NIGERIA'S MANUFACTURING sector has grown dramatically in the last few decades and continues to evolve in scope and scale. This paper highlights the changing landscape of these emerging manufacturing industries, and the challenges facing investors, particularly in the period following the collapse of global oil prices. Through in-depth interviews with Chinese investors and manufacturers, we found established and emerging clusters of investment in sectors including furniture, ceramics, and steel, many of which were oriented towards the domestic market, particularly the real estate and construction sectors. Indeed, a new Fujianese-origin cluster in Benin, identified by fieldwork in this paper, was oriented around real estate and construction entirely.

In the wake of the global oil price collapse in 2014, Nigeria experienced an economic recession which had serious impacts for investors; for Chinese investors, this has been felt most acutely via the exchange rate devaluation. Firms which imported their inputs, and trading enterprises, were worst hit by the recession, while those that had more localized production processes and inputs were best able to weather these shocks. The naira's plunge also halved profits and many firms reported struggling through the 2015-2016 period, some operating at a loss. Since 2016, the economy has recovered somewhat, however macroeconomic instability continues to be a risk for prospective investors.

Aside from macroeconomic challenges, firms emphasized the negative impact corruption and policy instability had on their operations, and in particular their role in deterring potential new investors. During the interviews in 2017, the prospect of upcoming presidential elections and potential policy instability were a source of risk for investors and a deterrent to investment and expansion. At the more local level, the

perceived and real corruption of various government agencies managing customs, taxes, and labor regulations rendered official Nigerian institutions more as an impediment than a support to business.

In terms of technology transfer, site visits and firm interviews found some evidence of linkages with local actors that contributed to knowledge and skills transfer in the form of intra-firm training processes and, to a lesser degree, technology transfer between firms. In terms of technology transfer between firms, we found backward linkages in a number of firms and sectors. In some cases, the downstream manufacturer had worked with upstream suppliers to improve their supply and quantity. However, the lack of an industrial ecosystem for supplies or spare parts meant that many firms relied on imported supplies. This limited the range of products and industries Chinese and domestic firms were able or willing to invest in.

Within firms, we found patterns of informal vocational training and localization of production processes to Nigerian staff. However, few industries had formal training schemes and attempts to create vocational training institutions have not come to fruition. Notably, across our interviews, we found a strong connection to the Confucius Institutes whose graduates are in high demand from Chinese businesses and factories across Nigeria. While largely serving as translators, these Nigerian graduates were better positioned to achieve higher-level supervisory and management roles within the Chinese firms they worked in.

Cultural challenges also hinder much-needed trust for joint investment and cooperation to flourish. In many firms, there was a palpable tension between Chinese managers and their African employees. A prejudice of low expectations is common, accompanied by stereotypes towards black or African peoples. This is a roadblock to localization. As a few respondents noted, even with local Nigerians promoted to managerial positions, it was difficult to ask Chinese to work under them. Though Confucius Institutes have helped to bridge linguistic gaps and created valuable assets for Chinese firms and Nigerian workers, such cultural gaps are a deeper challenge that remain to be addressed. ★

APPENDIX A

Appendix A1: Redacted List of Chinese Firms Visited & Summary of Firm Responses

Firms Interviewed	Interviewee Surname	Location	Year Invested	Total Investment USD	Initial Investment USD	Employees (estimate)	Local	Chinese	Other	% Local
Adonis Cutlery and Plastics	Zhang	Ogun FTZ	2015	300,000	150,000	31	27	4	-	87%
Aluminum Doors and Windows	Huang	Benin City	-	15,000,000	-	380	350	30	-	92%
Asia-Africa International Trucks	Zhong	Lekki FTZ	2015	6,000,000	-	38	25	13	-	66%
CFA Prefab	Wu	Ogun FTZ	-	-	-	3	-	3	-	0%
CWay Drinks	Chen	Ogun	2002	3,000,000	-	306	300	-	6	98%
CWay Water	Chen	Lagos	1999	225,000	90,000	870	850	15	5	98%
Discovery Furniture	Jin	Ogun FTZ	2011	4,500,000	-	181	175	6	-	97%
Dynasty Furniture	Wen	Lagos	2008	1,500,000	300,000	90	82	8	-	91%
First Battery	Li	Ogun FTZ	2014	1,500,000	-	16	13	3	-	81%
Goodwill Ceramics	Mei	Ogun FTZ	2011	97,500,000	15,000,000	1,950	1,800	150	-	92%
Gudy Foods	Sun	Lagos	2014	3,000,000	-	107	100	7	-	93%
Hewang Cardboard	Jiang	Ogun FTZ	2008	-	-	330	300	30	-	91%
Hexing Packaging	Zhang	Ogun FTZ	2011	2,000,000	1,000,000	23	20	3	-	87%
Jingsi Wihu	Ying	Lagos	2013	-	1,125,000	51	45	6	-	88%
Lifemate	Liu	Ikeja	2006	30,000,000	-	600	500	100	-	83%
New Watson Time Doors	Qing	Benin City	2016	3,000,000	1,500,000	210	200	10	-	95%

Appendix A2: Redacted List of Chinese Firms Visited & Summary of Firm Responses

Firms Interviewed	Interviewee Surname	Location	Year Invested	Total Investment USD	Initial Investment USD	Employees (estimate)	Local	Chinese	Other	% Local
Rongsheng Glass	Huang	Benin City & Lekki	2016	52,500,000	-	535	450	85	-	84%
Seven Star Farm	Ni	Ogun	2009	-	-	100	95	5	-	95%
Snowsea Freezers	Chen	Ogun FTZ	-	450,000	225,000	29	25	4	-	86%
Sun Ceramics	Liu	Ogun FTZ	2017	675,000	-	35	15	20	-	43%
Time Ceramics	Huang	Benin City	2014	52,500,000	-	1,445	1,300	145	-	90%
Weiyang/Seebest	Guo	Nasirawa	2014	15,000,000	5,250,000	450	350	100	-	78%
Yanuo Bags and Luggage	Chen	Lagos	2009	1,500,000	-	107	100	7	-	93%
Yongxing Steel	Zheng	Benin City	2012	-	4,500,000	650	550	100	-	85%
AVERAGE				16,102,778		370				83%

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14. Chen *et al.*, "Learning from China?" 2016.

15. The reason was due to a previous research group from a prominent US firm that had visited many manufacturing firms earlier this year. Interviews with the firm was forbidden by the Commercial Counsellor's office, via. the chamber of commerce, reportedly for suspicions of industrial espionage. Firms were instructed (via. Wechat) not to receive foreign researchers, and many firms continued to follow this instruction.
16. Shen reported that Hazan shoes had plans for establishing an industrial park for shoe manufacturing, but this never materialised. Interviewees in the zone believed that the firm was unable compete against imports; according to some zone management, the owner returned to China, where he has reportedly fallen into legal trouble due to unpaid debts and credit fraud, Shen, "Private Chinese Investment in Africa," 2013.
17. This has been the ongoing subject of legal dispute: representatives of Zhongfu allege collusion between NSG and the Ogun state government through what they term a hostile takeover, while NSG and the Ogun government maintain that the ownership was achieved by legal means through the transfer of equity shares. The new management company, New South Group, is a pharmaceutical trading and real estate company that specializes in antimalarial medicines (artemisinin) in Africa but has recently expanded into real estate and zone management across Africa. As well as the Ogun zone, the firm is also investing in a similar special economic zone in Kenya, giving them industrial footholds in both east and west Africa.
18. Chen *et al.*, "Learning from China?" 2016.
19. In one case, he was the first point of call for a Chinese expat involved in a car collision with a local Nigerian, dispensing terse advice through the phone.
20. Quoted anonymously from manager of a furniture firm.
21. The exchange rate crisis in 2014-15 caused the cost of flour and sugar alone to double in price, according to the manager.
22. As well as in-company training, they have also invited 3rd parties to train staff, including inviting training staff from competitors Coca Cola and Unilever to train their employees, as well as a training specialist in ISO 20000, in order to gain ISO certification.
23. Chen *et al.*, "Learning from China?" 2016.

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