

CHAPTER 1

Why Industry Matters for Africa

Economic growth in Africa has been on an accelerating trend for more than thirty years. The average annual growth rate of real output increased from 1.8 percent in the period 1980–89 to 2.6 percent in 1990–99 and 5.3 percent in 2000–09. Since 2010 it has remained in the range of 4.5 to 5.5 percent per year. One of the enduring “stylized facts” of economic development is that structural change—the movement of labor from low productivity sectors into higher productivity employment—is a key driver of growth, especially in lower income countries.¹ Despite two decades of solid economic growth, however, Africa has experienced relatively little structural change.² The region’s growth turnaround beginning in 1995 was largely due to making fewer economic policy mistakes, rising commodity prices, and natural resource discoveries.³

1. See, for example, Lewis (1954), Kuznets (1955), and Chenery (1986).

2. In general we use the terms Africa and sub-Saharan Africa interchangeably in this book, following the regional classifications of the World Bank and common usage. Where we wish to discuss only sub-Saharan Africa or North Africa we use those terms explicitly.

3. Arbach and Page (2008, 2009).

In both theory and history, industry has been a key driver of structural change, but it has only played a minor role in recent structural change in Africa. Since 2000, a growing share of African workers have been leaving agriculture and moving to higher productivity sectors. This positive structural change has contributed to overall growth, but the shift in employment has primarily been from agriculture into services for domestic consumers. Only about one in five African workers leaving agriculture has moved into the industrial sector.⁴ To us, these trends raise the question: How important is industry to Africa?

As we attempt to answer this question, the definition of “industry” is critical. When the economic statistics used today were first drawn up in the 1950s, there was little confusion over what industry meant. At the broadest level it encompassed mining, manufacturing, utilities, and construction. Of these, manufacturing—“smokestack industry”—was the subject of central interest. However, changes in transport costs and information and communications technology have shifted the boundaries of industry. A wide range of services and agro-industrial products have become tradable and have many features in common with manufacturing.⁵ Like manufacturing, they benefit from technological change and productivity growth. Some exhibit tendencies for scale and agglomeration economies.⁶ For that reason we take a broad view of what constitutes industry today. It is manufacturing and those tradable services and agro-industrial value chains that share the firm-level characteristics that are the subject of this book. Put more straightforwardly, we are interested in industry both with and without smokestacks.

In an attempt to understand industry’s importance to Africa, we begin this chapter with a snapshot of the magnitude of Africa’s industrialization challenge. We compare the structure of Africa’s economies with a number of benchmarks and with the cross-country patterns relating the size of the industrial sector to the level of per

4. McMillan and Hartgen (2014).

5. See, for example, Baumol (1985) and Bhagwati (1984).

6. See Ebling and Janz (1999) and Ghani and Kharas (2010).

capita income. The output and employment structure of a “typical” African economy is quite different from these comparators. The main gaps lie in the much smaller shares of output and employment in industry.

Although the numbers suggest that Africa has too little industry, it has managed to grow without industrialization for nearly two decades. Perhaps it does not need to industrialize. In this chapter we make the case that industry matters for Africa. We show that the slow pace of industrialization is at least partly responsible for the region’s disappointing performance in translating growth into good jobs and poverty reduction. Lack of industrial development may also have closed off important opportunities to raise women’s welfare. We end by arguing that industrialization has some special characteristics that can sustain growth.

Africa’s “Manufacturing Deficit”

Most African countries have national visions that call for achieving middle-income status over the next decade. One measure of the extent of structural change that might be needed for the transition to middle income can be found by comparing Africa’s current economic structure with that of a “benchmark” middle-income country.⁷ The World Bank defines lower-middle-income status as falling in the range US\$1,045–4,125 in 2012 purchasing power parity (PPP) prices.⁸ The lower bound of this range would seem to be a reasonable target for Africa’s national visions.

We constructed a benchmark economy by identifying a group of currently middle-income countries that have crossed the US\$1,045 threshold.⁹ We selected the following benchmark countries and

7. This idea was proposed in a single-country context by Bevan and others (2003).

8. The World Bank Atlas method of currency conversion is used.

9. Because the World Bank only provides GNI per capita in current terms, the GNI per capita in 2012 was projected backward using the GDP per capita growth rate to the US\$1,045 threshold, thus giving the benchmark year for

years: China (2000), India (2007), Indonesia (2004), Korea (1968), Malaysia (1968), Philippines (1976), and Thailand (1987). The economic structure of the benchmark is simply the average of the shares of value added and employment in four broad sectors—agriculture, manufacturing, other industry, and services—for these seven countries in the relevant year.

The differences between Africa and the benchmark are substantial (table 1-1). The largest difference is in industry. The manufacturing value added and the labor shares in low-income African countries are about half of the benchmark values. Even Mauritius and South Africa, the middle-income countries represented and arguably sub-Saharan Africa's two most successful industrializers, fall short of the benchmark in terms of the share of manufacturing value added in GDP. This is the region's "manufacturing deficit" relative to other lower-middle-income countries.

Table 1-2 gives another view of the manufacturing deficit. It compares selected indicators of industrial development for Africa with other developing countries in 2010, the last year for which we have reasonably comprehensive data. By any measure Africa's industrial sector is small relative to the average for the developing world as a whole. The share of manufacturing in GDP is less than one-half of the average for all developing countries, and in contrast with developing countries as a whole, it is declining. Manufacturing output per capita is about 10 percent of the global developing country average. Per capita manufactured exports are slightly more than 10 percent of the developing country average, and the share of manufactured exports in total exports is strikingly low. Moreover, these measures have changed little since the 1990s.¹⁰

Because economic structure reflects an economy's level of development, it is possible that the "manufacturing deficit" reflects nothing more than the lower per capita incomes of African countries.

each country. Small island economies and economies with populations of less than one million were excluded. Countries for which labor force data near the benchmark year were not available were also excluded.

10. See UNIDO (2009; 2013).

Table 1-1. *Africa's Manufacturing Deficit, 2010*

	Value added share			Labor share				
	Agriculture	Other industry	Manufacturing	Services	Agriculture	Other industry	Manufacturing	Services
Benchmark middle-income country	21.7	12.2	21.9	44.2	45.2	6.6	11.6	36.6
Africa low-income country	27.8	11.8	11.1	49.3	63.1	5.1	6.6	25.2
Africa middle-income country	4.8	10.9	17.1	67.2	8.6	11.9	16.8	62.7

Sources: McMillan and Rodrik (2011) database; World Bank World Development Indicators (WDI) database; de Vries, Timmer, and de Vries (2013). Authors' calculations.

Notes: Middle-income benchmark as described in text.

Africa low-income sample ETH, MWI, GHA, KEN, MAD, MOZ, SEN, TZA.

Africa middle-income sample MUS, ZAF.

Table 1-2. Selected Indicators of Industrial Developing Development, 2000–10

Region	Manufacturing value added			Manufactured exports			
	Share of GDP 2000 (percent)	Share of GDP 2010 (percent)	Per capita 2010 (US\$2,000)	Per capita growth 2000–10 (percent)	Share in total exports 2010 (percent)	Per capita 2010 (US\$2,000)	Per capita growth 2000–10 (percent)
Sub-Saharan Africa average	8.1	7.0	36.7	2.69	30.0	61.8	10.3
Developing countries average	20.5	21.0	400.2	3.01	74.0	579.6	7.1

Sources: UNIDO (2009); UNIDO (2013); UNIDO Industrial Development database. Authors' calculations.

Notes: Sub-Saharan Africa average excludes South Africa.

This is where cross-country patterns make a useful reference point. The relationship between manufacturing and per capita income has an inverted U shape. In the early stages of development when most economies are concentrated in agriculture, growth in income is associated with very rapid increases of the share of manufacturing in total output. As incomes and real wages rise and skills develop, the relative importance of manufacturing peaks and countries moving toward upper-middle-income levels diversify into more skill-intensive activities, including services.

Globally, the share of manufacturing in total output rises with per capita income until countries reach upper-middle-income status and then declines. While African economies generally conform to this global pattern, the vast majority are below the global average in terms of the relationship between per capita income and the share of manufacturing in GDP. Only Madagascar, Mozambique, Lesotho, and the Ivory Coast have shares of manufacturing in total output that exceed the predicted values for their levels of income. Many of the region's recent growth success stories—Ethiopia, Ghana, Kenya, Tanzania, and Uganda, for example—have shares of manufacturing in GDP that are well below their predicted values. Controlling for the level of income, Africa faces a larger deficit in terms of manufacturing than other countries at the same level of development.¹¹

Structural Change, Industry, and Growth

Because developing economies are characterized by large differences in output per worker across sectors, there is a substantial growth payoff when factors of production move from lower productivity to higher productivity sectors. Africa is the developing region with the most to gain from structural change. It has the greatest differences across sectors in output per worker. The average ratio of highest to lowest productivity sectors in Africa is more than twice that for Latin

11. Dinh and others (2013).

America and Asia.¹² This shows the large potential for structural change to boost growth of income per person in Africa, although recent research finds that this potential has not been fully tapped.¹³

Economywide changes in output per worker over time can be decomposed into two components.¹⁴ The first component reflects productivity growth within individual sectors. It is the weighted sum of changes in labor productivity in each sector of the economy, where the weights are the employment shares of each sector in the beginning period. Not surprisingly, it has come to be labeled the “within sector component” of productivity change. The second component captures the change in economywide labor productivity of labor reallocations across different sectors. It is the product of individual sector productivity levels in the end period with the change in employment shares across sectors. This is the “structural change component.” Among developing countries and across regions, the contributions of these two components to overall productivity change are strikingly different.

Between 1990 and 2010 the movement of workers from lower to higher productivity sectors—mainly industry—in Asia added substantially to economywide growth of output per worker. In this sense structural change was growth enhancing. Latin America was the polar opposite: there structural change was growth reducing. The share of workers in low productivity employment increased between 1990 and 2010, offsetting productivity improvements within sectors and reducing overall productivity growth.¹⁵

Africa’s record of structural change is mixed. From 1990 through 1999 Africa looked more like Latin America. Output per worker increased within sectors while the share of workers employed in high productivity sectors declined. Up until the turn of the

12. Page (2012a).

13. McMillan, Rodrik, and Verduzco-Gallo (2014); de Vries, Timmer, and de Vries (2013).

14. McMillan and Rodrik (2012) and de Vries, Timmer, and de Vries (2013) present differing decompositions reflecting different choices of weights. The exposition here follows McMillan and Rodrik.

15. McMillan, Rodrik, and Verduzco-Gallo (2014).

twenty-first century, structural change in Africa reduced growth of income per person.¹⁶

After 2000 labor in Africa began to move out of agriculture into more productive employment, but not into industry. Eight out of ten African workers who left agriculture ended up employed in the “market” services sector, mainly in trade, restaurants, and personal services.¹⁷ This amounted to movement from very low productivity employment to only slightly higher productivity jobs. Output per worker in services in Africa is only about two times higher than output per worker in agriculture. Average labor productivity in manufacturing is more than six times that in agriculture.¹⁸

Africa has a rapidly growing labor force, but employment in manufacturing and in other activities with high value added per worker is growing slowly. This pattern of structural change has some important implications for job creation and poverty reduction (as we explore in the next section). In addition, there is a risk that structural change in Africa will run out of steam. Services have been absorbing workers faster than the services sector has been increasing output. The relative productivity level of market services fell from 3.0 times the total economy average in 1990 to 1.8 times in 2010, suggesting that the marginal productivity of new services workers is low and possibly negative.¹⁹ This raises the risk that without a more robust growth of industry, the structural change component of growth in Africa may diminish or once again turn negative.

Jobs and Poverty Reduction

Africa has enjoyed twenty years of sustained economic growth. Yet there are many worrying signs that this has not resulted in robust

16. McMillan, Rodrik, and Verduzco-Gallo (2014).

17. De Vries, Timmer, and de Vries (2013); McMillan and Hartgen (2014).

18. McMillan and Hartgen (2014).

19. De Vries, Timmer, and de Vries (2013).

growth of “good” jobs—those offering higher wages and better working conditions—and rapid reductions in poverty.²⁰ Africa’s structural pattern of growth during the last two decades is at least partly responsible. The sources of growth in the region’s most rapidly growing economies have not been employment intensive. Lack of employment-intensive growth, together with the absence of progress in transforming traditional agriculture, are largely at the root of the region’s slow pace of poverty reduction. Industrial development offers a high employment, high productivity path for job creation, and evidence suggests that it can accelerate the pace of poverty reduction.

Industry and Africa’s “Employment Problem”

On the face of it, sub-Saharan Africa does not have a severe “employment problem.” In 2013 the overall unemployment rate for the region was 7.6 percent, compared with a global average of about 6 percent, and youth unemployment rates in many sub-Saharan countries are relatively low compared to world averages.²¹ Unemployment is low in Africa’s lower income countries—falling in the range of 1 to 5 percent for countries such as Ethiopia, Ghana, Tanzania, and Uganda. But the averages are misleading. For the great majority of Africans the employment problem is more about the quality of the job than the absence of a job. Low unemployment frequently signals poor quality employment.

When an African worker finds a job it is likely to be of low quality in terms of wages, benefits, and job security. Where unemployment in Africa is low the informal sector is large, and many workers are forced into household, family, or self-employment because of

20. See World Bank (2013).

21. ILO (2014). Unemployment rates in Africa are likely to be underestimated because the ILO excludes people who were not working or were not actively looking for work, but say they would take a job if one were offered.

the absence of a wage-paying job. The International Labor Organization (ILO) estimates that three out of four jobs in sub-Saharan Africa can be labeled “vulnerable” due to workers working on their own account or as unpaid family workers. In 2011 nearly 82 percent of workers in Africa were classified as working poor, compared to the world average of about 39 percent. The overwhelming majority of young workers in both rural and urban areas are engaged in informal self-employment. Fewer than one in five of Africa’s young workers find places in wage employment.²²

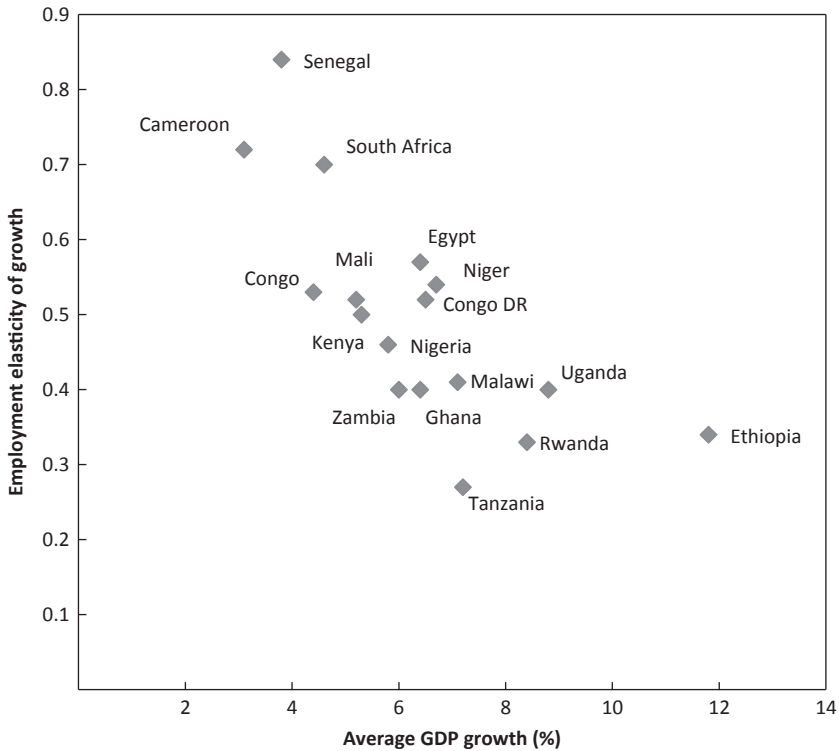
Africa’s poor employment outcomes largely reflect the reality that the region’s fastest-growing economies—Ethiopia, Rwanda, Tanzania, and Uganda, among them—have the lowest responsiveness of formal employment to growth (figure 1-1). In fact, there is no statistical relationship in Africa between economywide growth and the rate of growth of formal employment.²³ This is a highly unusual finding. Globally, there is a statistically significant relationship between growth of GDP and employment growth. Between 1991 and 2003, for every 1 percentage point of additional GDP growth, total employment grew between 0.3 and 0.38 percentage points.²⁴

The case of Tanzania, one of the countries we studied under our Learning to Compete (L2C) program, makes the point more concretely. Tanzania has a young and rapidly growing population. Approximately 800,000 new workers enter the domestic labor market every year. The economy, however, is not creating that number of “good” jobs. In fact, Tanzania’s performance in job creation has been among the most disappointing of the region’s “growth miracle” economies. As the supply of workers seeking nonfarm employment has outpaced demand in the wage sector, many labor force participants have been left with no choice but to create their own jobs. Today, 5 million nonfarm businesses operate in Tanzania. This is one of the highest rates of business formation in the world (one

22. ILO (2011).

23. Page and Shimeles (2015).

24. Kapos (2005).

Figure 1-1. *Employment Elasticities and Growth in Africa, 2010*

Source: Page and Shimeles (2015).

for every four people), four times higher than in the United States and ten times higher than in France.²⁵

The vast majority of these enterprises are in the household sector. Between 2000 and 2006, employment in the household enterprise sector grew by 13 percent, exceeding the overall growth in the labor force and the growth of wage employment. These are tiny firms consisting of a single entrepreneur, perhaps working with unpaid workers who are likely to be family members. The vast majority of household business owners tend to be subsistence entrepreneurs who have minimal business skills. More than two-thirds of household

25. World Bank (2014c).

enterprises in urban areas were formed because of lack of any other job opportunities.²⁶

It is perhaps no surprise, then, that the political conversation in Africa often turns to the problem of “jobless growth.” Industry, including manufacturing, tradable services, and agro-industry, is a high productivity, employment-intensive sector into which labor can potentially flow. As we shall see in chapter 2, it is a sector that has been growing more slowly than the economy as a whole for more than twenty years. The failure to industrialize is clearly a major part of Africa’s employment problem.

Industry, Structural Change, and Poverty

Poverty in Africa is something of a puzzle. We know that while individual country experiences vary, growth is good for the poor; poverty declines as per capita incomes rise. And we know that the pace of poverty reduction for any rate of income growth is affected by the distribution of income. The puzzle is that Africa has both the lowest responsiveness of poverty to per capita income growth and the lowest responsiveness of poverty to changes in income distribution of any of the world’s developing regions.²⁷ The answer to the puzzle lies in part in the structural changes that have accompanied Africa’s recent growth. Both cross-country evidence and country-level simulations suggest that Africa’s performance in reducing poverty would have been better had the region started its structural transformation earlier and had it experienced more robust growth of industry.²⁸

Our first piece of evidence comes from cross-country econometric work. Standard cross-country analysis of poverty reduction assumes that the poverty headcount ratio—the share of poor in the population—is a function of per capita income growth and income

26. Kweka and Fox (2011).

27. Page (2015a).

28. Africa’s poverty challenges are also related to initial conditions reflected in basic economic structures. See Arndt and others (2012).

distribution.²⁹ To examine the influence of structural change on poverty we can modify this relationship to test whether the poverty headcount ratio is affected by variations in the share of employment in agriculture, services, and industry, controlling for per capita GDP and the income distribution. We performed such a test for a sample of all developing countries, and the results support our intuition that industrialization can play an important role in accelerating the pace of poverty reduction.³⁰ Controlling for income growth and income distribution, a 1 percent increase in industrial employment is associated with a 0.8 percent reduction in the poverty headcount ratio.³¹

While the cross-country evidence is suggestive that industrial development can accelerate poverty reduction, it is unlikely to convince skeptics. Another way to get at the same question is to undertake some simulations. There are twelve African countries where sector-specific poverty headcounts at the level of three broad sectors—agriculture, industry (including manufacturing), and services—are available. We can use these data to estimate what the outcome in terms of poverty would have been, had these countries gone through a pattern of structural change more in line with other countries moving from low to middle income.

Because economic structure is itself a function of per capita income, we need a “counterfactual” distribution of employment for each of the twelve African countries at their current levels of development. To arrive at such a counterfactual we again identified a sample of non-African countries, mainly in Asia, that had achieved or were rapidly transitioning to middle-income status. We averaged the shares of employment in agriculture, industry, and services of the benchmark countries at the time they were at the level of per

29. See, for example, Fosu (2011).

30. For those interested in the econometrics, we also controlled for unobserved time-invariant, country-specific effects. To address possible endogeneity of the sectoral shares of employment, per capita income, and the Gini coefficient, the model was estimated by the generalized method of moments (GMM) using internal instruments (two period lags).

31. Page and Shimeles (2015).

Table 1-3. *Actual and Counterfactual Employment Distributions*

<i>Country</i>	<i>Share of total labor force</i>		
	<i>Agriculture</i>	<i>Industry</i>	<i>Services</i>
Least developed countries (US\$600–700)	70.0	12.0	18.0
Ethiopia 2005	83.2	5.6	11.2
Malawi 2004	77.6	6.0	16.4
Low-income countries (US\$900–1,100)	60.9	14.4	24.7
Mali 2005	66.0	6.0	28.0
Rwanda 2010	79.0	4.0	17.0
Tanzania 2005	76.7	4.8	18.5
Uganda 2005	72.0	5.0	23.0
Zambia 2005	72.9	6.5	20.6
Transitioning and lower-middle- income countries (US\$1,200–1,500)	57.9	16.7	25.4
Ghana 2005	48.1	15.1	36.8
Kenya 2010	48.3	16.4	35.3
Nigeria 2010	59.6	5.9	34.5
Senegal 2005	52.8	13.0	34.2
Upper-middle-income countries (US\$10,000)	14.0	29.0	57.0
Botswana 2005	39.2	14.3	46.5
Mauritius 2010	7.2	30.3	62.6
South Africa 2010	15.0	23.2	61.8

Sources: McMillan and Rodrik (2011) database; World Bank World Development Indicators (WDI) database; de Vries, Timmer, and de Vries (2013). Authors' calculations.

Notes: Least developed country benchmark: BGD (1994), CAM (1996), CHN (1987), IND (1989), IDN (1982), VNM (1992); Low-income benchmark: BGD (2003), CAM (2002), CHN (1992), IND (1994), IDN (1986), THL (1980), VNM (1996); Transitioning economies benchmark: CAM (2005), CHN (1995), IND (2000), IDN (1992), PHL (1982), THL (1985), VNM (2001); Middle-income benchmark: CHL (2003), KOR (1993), MYS (2004).

capita income of each of the twelve African economies at the time the poverty statistics were collected. The distributions of employment for the African sample and the counterfactual distribution appropriate to their level of income at the time the poverty rates were estimated are shown in table 1-3. In general the African economies have a higher share of their labor force engaged in agriculture and services and a lower share engaged in industry than the counterfactuals at each income level.

Table 1-4. *Structural Change and Poverty Simulations*

<i>Country</i>	<i>Observed poverty headcount</i>	<i>Simulated poverty headcount</i>	<i>Percentage change in headcount</i>
Ethiopia 2005	41.6	39.7	-4.6
Malawi 2011	65.6	63.5	-3.2
Mali 2005	47.4	47.4	0.0
Rwanda 2005	52.8	48.5	-8.1
Tanzania 2007	62.6	55.2	-11.8
Uganda 2005	36.2	34.0	-6.1
Zambia 2003	64.9	63.4	-2.3
Ghana 2005	22.6	22.9	1.3
Nigeria 2010	66.8	66.6	0.0
Senegal 2005	31.1	40.3	29.6
Botswana 2005	34.4	30.7	-10.8
South Africa 2006	15.9	11.6	-27.0

Source: Authors' calculations as described in text.

We then carried out our simulations using the sector-specific poverty headcount data and the counterfactual distribution of employment based on the structural characteristics of the non-African economies.³² In effect we asked: What would the poverty outcome of the countries in Africa have been if structural change had been more in line with the observed experience of other economies at the same level of per capita income? The results of these simulations are given in table 1-4.

While there is considerable variation in the country-by-country results the main takeaway is clear. Had Africa's economies gone through patterns of structural change that were more in line with those of the counterfactual economies—a faster decline in the share of the labor force in agriculture and a more rapid increase in the employment share of industry—poverty reduction would have been greater. The median poverty headcount for the twelve countries in the sample falls by about 4 percentage points in the simulation. The reductions in the headcount are largest for the country groups—

32. For a more detailed description of the method, see Page (2015a).

high-income economies and low-income economies—that most diverge from the structural characteristics of their benchmark.

Creating Opportunities for Women

In addition to generating good jobs and accelerating poverty reduction, industrialization has the power to transform women's lives. Manufacturing growth has been known to be associated with increases in female labor force participation for a long time. This adds to household incomes and may increase women's independence. More recently, evidence has begun to accumulate that manufacturing improves the welfare of women workers in other ways. There is some evidence that access to factory jobs increases the chances that girls will stay in school and postpone marriage by increasing the returns to education and by raising the opportunity cost of being married.

The garment industry in Bangladesh currently employs more than 3 million women, about 15 percent of women between the ages of sixteen and thirty. It was the first industry to provide large-scale employment opportunities to women in a country where traditionally they have not worked outside the home. In addition to creating jobs, the arrival of the garment factories has affected women's school enrollment, marriage, and childbearing decisions. Young women are entering school in greater numbers, staying in school longer, and postponing marriage and childbirth.³³

Because garment manufacturing jobs reward basic literacy and numeracy, school enrollments in villages within commuting distance to garment factories have responded strongly to the arrival of textile plants. Enrollment rates in villages near textile plants increased by nearly 40 percentage points compared with villages that did not have a garment factory nearby. Women appear to be seizing these

33. Rivoli (2005) points out that in the United States at the turn of the twentieth century, textile factories in the South played a similar role in women's decisions to stay in school and postpone marriage.

educational opportunities in higher numbers than men. Girls living in a “typical” (median) village near a textile plant stay in school for an extra 1.5 years relative to their brothers. In these villages there was a 50 percent increase in girls’ educational attainment compared to nonfactory villages. Access to manufacturing employment has also helped to reduce early marriage and childbirth. Girls in villages near factories are choosing to work when they are about seventeen to twenty-three years old instead of getting married.³⁴

A similar transformation in the working lives of women has taken place in Lesotho. From the early 1980s to 2010, Lesotho’s manufacturing sector expanded from about 6 to 18 percent of GDP. This was driven mainly by strong growth of apparel exports, and it was accompanied by a significant increase in female wage employment. In recent years the garment industry has employed between 35,000 and 43,000 workers, and women make up between 70 and 75 percent of the workforce. In some activities, such as cutting and sewing, women represent between 90 and 95 percent of workers.

Apparel exports have created a large number of new jobs for relatively unskilled women, more than 60 percent of whom come from rural areas. While wages are low, they exceed earnings in agriculture and self-employment. Core labor standards regarding working conditions are respected by the industry. Little is known yet about the impact of employment on women’s education, marriage, and fertility decisions, but employment in Lesotho’s garment industry has affected their welfare in another very important way. In a country where, by some estimates, as many as 40 percent of workers are HIV-positive, women working in the factories have access to innovative workplace health programs that provide free HIV care and treatment. The fact that workers can go to the clinics while they are on the factory premises is of great importance. It means that they do not miss a working day.³⁵

34. Heath and Mobarak (2014).

35. UNCTAD (2012).

Manufacturing and Convergence

In an open world economy, poor countries should grow faster than rich ones. Conventional economic theory suggests that the return to investment will be higher in poor, capital-scarce economies, and global export and capital markets in principle break the constraints imposed by domestic markets and national savings. Thus, investment rates in poorer economies should rise, and over the long run as capital per person grows, income per person in developing countries should increase to the levels of the world's richer economies. This is called convergence.

In reality, convergence has been the exception rather than the rule. Except in East Asia, sustained rapid growth in poor countries has been rare, and only a handful of low-income countries have reached high income levels. Economists have accommodated this reality in two ways. In theory, new growth models have evolved that do not impose diminishing returns to capital.³⁶ In empirical work, convergence in developing economies has been shown to depend on a variety of country-specific factors that range from weak institutions to poor geography to inappropriate policies. The argument is that these hurdles must be overcome for investment to increase and become more productive. Only once the constraints are removed will developing nations begin to converge to rich-country income levels. This has come to be called "conditional convergence."

Manufacturing is apparently the exception. In manufacturing, convergence is "unconditional." Dani Rodrik has found that since 1960, output per worker in manufacturing has increased to advanced economy levels, regardless of country-specific or regional factors. This turns out to be as true for Africa as for any other region. An equally important finding of Rodrik's research is that unconditional convergence is not characteristic of agriculture or services.³⁷

Unconditional convergence in manufacturing opens up two channels for economywide growth. The first is productivity growth within

36. For a survey of these "endogenous growth models," see Romer (1994).

37. See Rodrik (2013).

manufacturing itself. Its importance to overall productivity growth depends on the size of the manufacturing sector, the economy's distance from best practice productivity levels, and the rate of convergence. The second channel is structural change into manufacturing.

Because the manufacturing sector has the potential to converge unconditionally to high levels of productivity, a shift in employment out of agriculture into manufacturing—the pattern of structural change seen in Asia—can be strongly growth enhancing.³⁸ Economywide growth depends crucially, however, on the size of the modern manufacturing sector and its rate of growth—in short, on the pace of industrialization. This is not good news for Africa. Africa's manufacturing sector is small and its pace of industrialization has been slow for more than forty years.

What You Make Matters

Two more stylized facts related to the structure of industry itself add to the case for industrialization. First, more diversified production and export structures are associated with higher incomes per capita. As income per person rises, the range of industrial activities becomes more diverse until quite high levels of income are reached.³⁹ Second, countries that produce and export more sophisticated products—those that are primarily manufactured by countries at higher income levels—tend to grow faster.⁴⁰ We have found that differences in diversification and sophistication are strongly related to differences in long-run growth in developing countries.

We divided a large sample of low- and middle-income countries into a four-way classification based on growth performance and income level. Slow-growing countries were defined as those with average growth below the median for all countries in the sample between

38. Rodrik (2014).

39. See, for example, Imbs and Wacziarg (2003), Hummels and Klenow (2005), and Cadot, Carrère, and Strauss-Kahn (2011).

40. See Hausmann, Hwang, and Rodrik (2007) and UNIDO (2009).

1975 and 2005. Fast-growing countries are those with average growth above the median. The countries were split between low- and middle-income status on the basis of their ranking in the World Bank classification system in 1975. We then estimated the level of sophistication of production and exports in three groups of products for each country grouping between 1975 and 2005.

Next, we used the four-way classification to explore the relationship between sophistication in production and exports and long-run growth. Figure 1-2 shows how the production structure of developing country manufacturing evolved in terms of sophistication between 1975 and 1985 and 1995 and 2005. Our focus is on two classes of industrial activity, low- and high-sophistication products.⁴¹ The vertical axis gives the average share of the country-product group in total production relative to the world as a whole. This is defined as “production intensity.” A value of one means that the average share of the product group in total output is equal to the global average; values less than one indicate that the product represents a smaller share of national production than of global production, and vice versa.

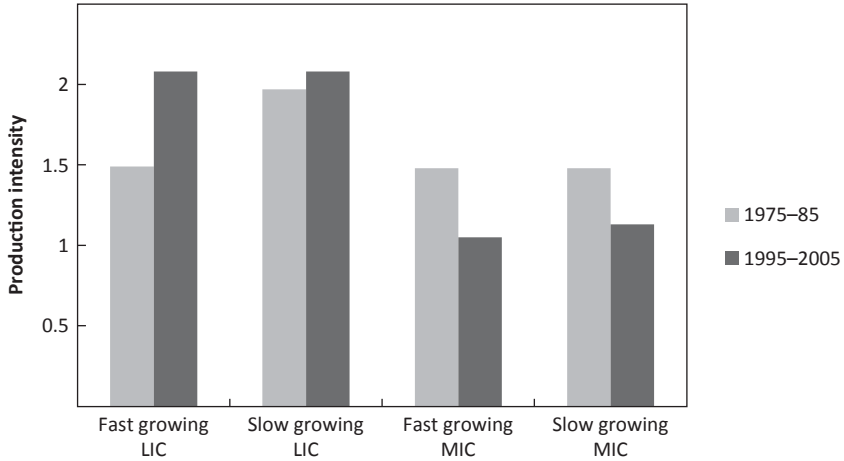
Each vertical bar shows the average production intensity for the periods 1975–85 and 2000–05 for the country-product group. Increases in intensity indicate that the share of the product group in national output is increasing relative to its share in global output. Thus, changes in this ratio show whether an economy is entering or leaving a sector relative to the evolving structure of global production.

The results strongly support the assertion that “what you make matters.” Between 1975 and 1985 and 1995 and 2005, fast-growing low-income countries diversified their production structures by increasing the production intensity of both low-sophistication and high-sophistication manufactured goods. Production among the slow growers—mainly countries in Africa—on the other hand became

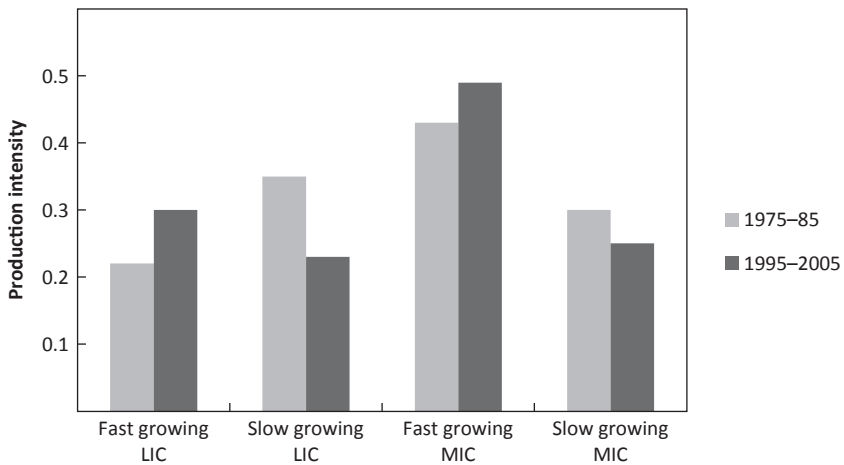
41. Manufacturing activities are classified as “sophisticated” if they have an index value of US\$13,500 or above for the period after 1995 (regardless of their values in the earlier periods). Unsophisticated activities are classified as those with values below US\$10,000 in 1995. The omitted category of products lies between those two bounds.

Figure 1-2. *Production Intensity by Country and Product Group, 1975–85 and 1995–2005*

Low sophistication products



High sophistication products



Source: UNIDO (2009) Production Sophistication database. Authors' calculations.

Notes: The vertical axis represents the production intensity; a value of one indicates world average intensity. The division between low and high sophistication is based on the sector rankings presented in UNIDO (2009). The high-sophistication group is made up of the Fabricated Metals (381), Machinery (382), Electrical Machinery (383), Transport (384), Equipment (385), Furniture (332), and Printing and Publishing (342) sectors. The low-sophistication group is made up of the Food (311), Beverages (312), Tobacco (313), Textiles (321), Leather (323), Footwear (324), and Rubber (355) sectors.

more concentrated in low-sophistication products. They also became less sophisticated. Production of high-sophistication manufacturers in slowly growing low-income countries declined dramatically in relation to the structure of world manufacturing output. Middle-income countries tell a similar tale. Fast and slow growers have quite distinct patterns of production intensity. Fast growers that were highly concentrated in high-sophistication products in 1980 became more sophisticated; slow growers did not.

Figure 1-3 repeats the analysis for exports. The interpretation of export intensity is the same as for production intensity, except the base is the global structure of exports. This is analogous to calculating revealed comparative advantage. The results for export intensity indicate that what you export matters as well. Fast-growing low-income countries showed a strong revealed comparative advantage in low-sophistication exports, as they moved decisively into the export space vacated by the rapidly growing middle-income countries. The fast growers also nearly doubled the intensity of high-sophistication exports. Slowly growing low-income countries only modestly increased the intensity of low-sophistication exports, and export intensities of high-sophistication manufactures were virtually unchanged over two decades. Fast-growing middle-income countries exited low-sophistication exports and rapidly increased the intensity of high-sophistication exports, in marked contrast to their slow-growing counterparts.

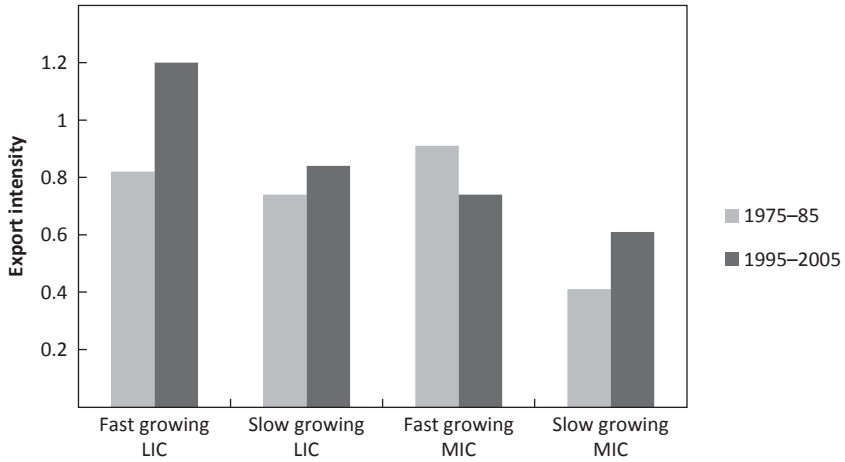
Our results suggest that economies that succeed in moving up in terms of the diversity and sophistication of their manufacturing sector have greater prospects for sustained long-term growth. One reason may be that more diverse economies are better able to take advantage of opportunities in global markets. Industrial diversification appears to take place at lower levels of per capita income than export diversification.⁴² This is consistent with the idea that firms build competence in new activities locally and then enter global markets.

Diversification into more sophisticated products provides an additional advantage. Because sophisticated products embody advanced

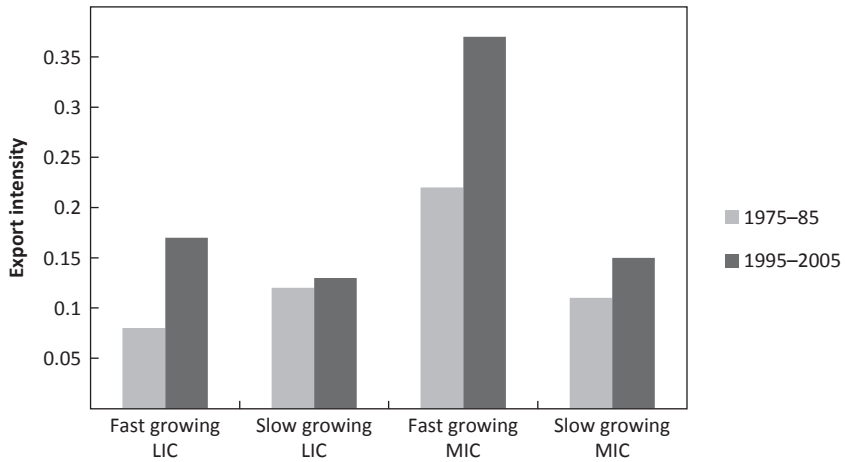
42. UNIDO (2009).

Figure 1-3. *Export Intensity by Country and Product Group, 1975–85 and 1995–2005*

Low sophistication exports



High sophistication exports



Source: UNIDO (2009) Production Sophistication database. Authors' calculations.

Notes: The vertical axis represents the export intensity; a value of one indicates world average intensity.

The division between low and high sophistication is based on the sector rankings presented in UNIDO (2009).

The high-sophistication group is made up of the Fabricated Metals (381), Machinery (382), Electrical Machinery (383), Transport (384), Equipment (385), Furniture (332), and Printing and Publishing (342) sectors.

The low-sophistication group is made up of the Food (311), Beverages (312), Tobacco (313), Textiles (321), Leather (323), Footwear (324), and Rubber (355) sectors.

country productivity levels, the ability of firms in lower income countries to produce and, especially, to export such goods indicates that they have mastered both the technology and the management practices required to be globally competitive in price and quality. These are “high capability” firms in the sense that we shall discuss in chapter 5, and economies with large numbers of high capability firms have a strong base for productivity change and long-run growth.⁴³

Like many of the structural characteristics that we discuss in this book, the roles of convergence, diversity, and sophistication appear to change during the process of economic development. At low levels of per capita income, unconditional convergence to best practice productivity levels, driven by better knowledge of production and technological catch-up, is likely to be the primary source of productivity change in manufacturing. Because the impact of convergence depends on the size of the manufacturing sector and the rate of its growth, structural transformation driven by the expansion of industry, even in relatively unsophisticated activities, can be a significant source of productivity growth in low-income countries. As incomes rise, productivity growth from sectoral reallocation is eventually exhausted, and firm-level sources of productivity growth become increasingly important.⁴⁴ Diversity and sophistication are then likely to play a larger role in sustaining productivity growth in manufacturing and overall economic growth by contributing to the accumulation of firm capabilities.

Summing Up

This chapter has presented our case for industrial development in Africa. We believe it is a strong one. Africa has seen a “growth

43. Sutton (2012).

44. One strand of the literature on “middle-income traps” explores the implications of this shift for economies trying to break into high-income status. See, for example, Eichengreen, Park, and Shin (2011) and Gill and Kharas (2007).

miracle” over the last two decades. However, until quite recently this remarkable growth took place without the kinds of changes in economic structure that were the hallmarks of the economic transformations of today’s high-income industrialized economies and, more recently, of the rapidly growing economies in East Asia. In fact, until the turn of this century structural change in Africa may have reduced its overall rate of growth of output per person. The missing player in Africa’s growth story has been industry. Even for its level of income, the relative size of Africa’s industrial sector and especially manufacturing is smaller than expected. Given the aspirations of Africa’s economies to place themselves solidly among the ranks of middle-income countries by 2025–30, this deficit will need to close.

Industry matters for Africa in multiple ways. Africa has only recently begun to experience growth-enhancing structural change, but these changes have been unlike those experienced elsewhere. The shift in employment has been from agriculture to services, where output per worker is less than a third of manufacturing. Africa’s inability to create enough higher output per worker jobs in the face of a rapidly growing labor force has reduced the impact of growth on wage employment and poverty reduction. Industry can make a positive contribution to solving these problems. Industry is an engine of growth-enhancing structural change. Manufacturing, tradable services, and agro-industry are all labor-intensive, high productivity sectors into which workers leaving agriculture can move. This movement is critical for the growth of wage employment and poverty reduction.

Manufacturing also has a special role to play in sustaining growth. Modern manufacturing industries converge to best practice productivity levels regardless of geographical disadvantages, poor institutions, or bad policies. This provides a powerful engine of productivity growth and increases the potential for growth-enhancing structural change. When productivity growth within the manufacturing sector and structural change work in tandem, the growth payoff can be large. Within the manufacturing sector what a country makes matters. At higher levels of income per capita, more diverse and so-

phisticated production and export structures increase the chances for sustained growth.

While these characteristics of industry open up new possibilities for growth, job creation, and poverty reduction, success mainly depends on the pace of industrialization. That is not good news. Today, sub-Saharan Africa is more or less where it started in terms of industrial development half a century ago. The policy choices and external circumstances that helped to shape this trajectory are the subject of the next chapter.