

# **Competitiveness in African Manufacturing: Some Evidence from Tanzania**

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## I. Introduction:

There is a long tradition in economics which argues that manufacturing industry is critical for economic growth, particularly at relatively low income per capita (Weiss 2011). This 'engine of growth argument' rests on several features of the sector

- Output per worker (productivity) is normally considerably higher than in agriculture or services (although not in mining) so that structural change in favour of manufacturing raises the overall productivity of an economy.
- Productivity growth in manufacturing has historically been more rapid than in other sectors due to greater technical change and learning effects
- Manufacturing is the sector where there is greater scope for specialisation as outputs grows
- Its linkages with other parts of the economy are greater than for any other aggregate sector
- As a key tradable sector manufacturing expansion allows access to the world market and faces better demand prospects there than primary exports.

The normal historical pattern has been that, in poor countries, the share of manufacturing in total economic activity is very low, but that as growth occurs and workers move out of agriculture it rises rapidly. Once a threshold income level is passed the relative share of manufacturing starts to decline as demand shifts towards services.<sup>i</sup> Thus for example, in 2005, manufacturing was 9% of GDP in Ghana, 30% of GDP in a middle income economy like Malaysia and averaged 16% in the OECD economies (Smirzai 2013: Table 1.2). It is at the transition from low to middle income status that the engine of growth effect can be expected to be greatest due to the greater scope for a productivity boost as workers shift out of agriculture.

Experience in Sub Saharan Africa has not matched this positive story. The sector remains relatively small with much of it vulnerable to competition from imports. This chapter discusses some evidence

on recent Tanzanian experience in the context of industrialisation in Africa more generally. Following the introduction in section II we look at African experience, before turning to the Tanzanian case in section III. Section IV presents some empirical evidence from firm level surveys of manufacturers in Tanzania and section V concludes.

## **II African industrialisation: unfulfilled expectations**

The disappointing performance of industrialisation in Sub-Saharan Africa is now well known. When African economies emerged as independent states in the 1960's they were largely based on primary products, minerals and low productivity services. There are estimates which suggest that for sub-Saharan Africa in 1960 agriculture took 42% of GDP and manufacturing 8%, with most of this small scale informal sector activity (UNIDO 2013 table 1.1). By 2011 whilst the share of agriculture in economic activity had declined and that of services had risen significantly that of manufacturing was no more than 10%, and if South Africa is removed from the calculation, the average falls to 7%.<sup>1</sup> Consequently Africa's share in world manufacturing value added has remained very small at around 1% of global production over this period and Africa's share in manufacturing value-added in the 'industrialising country' group has fallen. Even though sub-Saharan Africa has had a relative strong GDP growth since 2000 in part because of favourable international commodity prices, only seven countries out of 23 have had a growth of manufacturing value added over 2001-2012 in excess of 5% annually, so whilst there has been a recovery in manufacturing it is modest and is not spread widely across the region.<sup>2</sup>

Since the 1970's much of the labour migration out of agriculture has been either to low productivity services or to low productivity informal manufacturing rather than to the formal higher productivity segment of manufacturing on which the 'engine of growth' case is based. It has been argued that the shifts in economic structure that have occurred in Africa have retarded growth as labour has not

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<sup>1</sup> South Africa is very much an outlier in the region with manufacturing value added per capita in 2011 of \$897 (2005 constant dollars). In contrast the figure for Tanzania is \$40 and in Ethiopia it is as low as \$11; see UNIDO 2013 table A 3.1.

<sup>2</sup> World Bank World Development Indicators; world manufacturing grew at 3.5% annually over this period.

moved from agriculture to higher productivity activities and thus overall levels of productivity have increased only very modestly and in some cases have declined (MacMillan and Rodrik 2011).

However it appears that the revival of growth post 2000 has altered this picture in Africa with evidence that in at least some countries the structural shift of labour has been into higher productivity activities in either manufacturing or services, so that the structural change which has taken place, whilst still modest has become growth- enhancing rather than growth-reducing.<sup>3</sup>

There are different interpretations of this story of the relative failure of industrialisation in Africa.<sup>4</sup> In one, African industrialisation was always going to be limited by a number of unfavourable initial conditions, many of which still exist today. An interesting very early statement of this position is from the one of the pioneers of Development Economics W.A Lewis in his policy document on the prospects for industrialisation in the Gold Coast written in the early 1950's (Lewis 1953). In putting forward a series of policy ideas to support industrialisation in the Gold Coast, Lewis was clear that whilst industrialisation is a useful way to diversify the economy and create employment a major programme to support industrialisation would be premature. He saw low productivity agriculture as the key bottleneck to successful industrialisation and without rising productivity in agriculture, the home market would be small, with little surplus income for investment. Hence he saw raising agricultural productivity combined with improvements to infrastructure and public services as the key priorities. Policy for industry should focus selectively on activities that could be competitive in a relatively brief period with modest levels of support.

In addition to a stagnant Agricultural sector, Lewis identified key features of the Gold Coast which hindered its industrialisation and which remain relevant to contemporary policy debates. First there is issue of factor endowments and whether those of African economies imply that a specialisation in industry is justified. Lewis argued that the land-labour ratio is such that in the Gold

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<sup>3</sup> MacMillan, Rodrik and Verduzo Gallo (2014) update their original analysis for Africa by splitting the time periods pre and post 2000. In half the African countries in their sample post-2000 the shifts of labour into manufacturing were sufficient to create productivity enhancing structural change.

<sup>4</sup> Lawrence (2015) examines African industrial experience in detail.

Coast it is land not labour (or at least not male labour) which is the surplus factor.<sup>5</sup> This means that for male workers whilst money wages are low by European standards they are high by the standards of other underdeveloped countries and this poses a key constraint on using the export market as the basis for industrialisation.

This argument from the early 1950's has been used many times since then to assess Africa's comparative advantage in manufacturing and explain its continued relatively low level of manufacturing production and exports (Wood and Berge 1997, Collier 2000). Cross country firm-level surveys confirm relatively high African wages in some, but not all, countries relative to competitors at similar income levels (Clark 2012). Furthermore even where African wages are below those in emerging economies like China and Vietnam they are offset by the productivity differentials, so unit labour cost of production is higher in most African producers than in these key competitors (Dinh et al 2012).

The second disadvantage highlighted by Lewis is the high cost of what he terms public services – which he listed as electricity, water, gas, telephone and transport facilities.. Discussion of the inadequacy of infrastructure in most of sub-Saharan Africa continues and it is commonly accepted as a continued constraint which has still not been addressed (Page 2013). Firm level data suggests that high logistics and infrastructure cost is a more serious disadvantage than wage cost (Clarke 2012).

The interpretation placed on these results is that the key to understanding Africa's failure to break into export markets for manufactures, lies not in its wage or labour productivity levels, but in indirect costs linked with the 'business environment'.<sup>6</sup> The latter is a term

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<sup>5</sup> "... there is a shortage of labour in the sense that at the current level of wages employers cannot get all the labour they want, in spite of the fact that there is considerable immigration from the French Territories" (Lewis 1953: para 223).

<sup>6</sup> On average across firms in the low and middle income countries in Africa these 'business environment' costs account for 9% of sales, as opposed to less than 3% in upper middle income African economies and less than 2% in successful East Asian exporters (Clarke 2012: table 9).<sup>6</sup>

typically defined very broadly to include weak governance, which makes it difficult to enforce contracts and property rights, including rights to land, lack of access to finance through an underdeveloped system of financial intermediation and excessive regulation and bureaucratic control. The combination of relatively high wages and high transaction and infrastructure costs has meant that sub-Saharan Africa has largely been excluded from global manufacturing value chains (although there is evidence of successful links with food and horticultural-based chains for international retail sales).<sup>7</sup>

This interpretation of the difficulties of industrialising Africa can be contrasted with the view that policy can create its own opportunities and overcome obstacles like those listed above by sheltering local producers from foreign competition and by building linkages within the domestic economy. This implies that the import substitution era of the 1970's and early 1980's should have been built on to provide the base for later export expansion in the same way as occurred in East Asia. In this view the import liberalisation that occurred as part of structural adjustment lending was an opening of the region's economies from a position of weakness not one of strength (as in East Asia) leading to a loss of manufacturing skills and capabilities which have taken decades to rebuild.<sup>8</sup> This type of counterfactual argument is difficult to resolve. What we know is that much of the manufacturing sector in Africa in the 1970's and 1980's was high cost by international standards, often due to many of the factors listed above. Trade liberalisation alone was insufficient to reverse this trend and it may

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<sup>7</sup> As a crude indicator manufactured exports were only around a quarter of total exports for sub-Saharan Africa excluding South Africa in 2011, as compared with over 70% for all industrialising economies (UNIDO 2013: table A.6.6)

<sup>8</sup> As Lawrence (2015) puts it 'Had interventionist policies to rescue and rehabilitate failing enterprises been rigorously followed rather than allowing import liberalisation to put them out of business altogether, it could be argued that SSA's manufacturing sectors would have been able to build on the previous 20 years of accumulated experience.'

well be that a more phased approach combined with supply-side support to resolve some of the key constraints, particularly a lack of finance, might have yielded better results.

Is Africa an outlier?

Regions of the world economy are different. As noted above, Africa has a much higher land-labour ratio than Asia, with relatively high levels of exploitable natural resources, which affect relative factor prices and the cost of non-traded activities, which in turn push up real exchange rates and thus penalise tradable activities like manufacturing. Other distinctive features in Africa include a disproportionately large share of small informal firms and a 'missing middle' of medium sized firms, within the sector, both of which will create a wide range of productivity levels between firms within a sector, with some African firms operating close to the best practice frontier and others, usually considerably smaller, operating well within it (Gelb et al 2014).

There is a wealth of statistical evidence illustrating these trends and highlighting the distinctive experience of Africa. Earlier work by the authors looked at the period 1975-93 and found that whilst there was tendency for the manufacturing share in GDP to fall over this period there was considerable heterogeneity amongst African economies and for the 16 countries as group there was no evidence that this decline was any more marked than in other regions once trends in income and population were controlled for. However the Africa sample as a whole appeared to behave differently from the other developing countries with individual country factors dominating (Jalilian and Weiss 2000).

Rodrik (2015) has updated this analysis. Now controlling for income and population, a smaller sample of 11 African countries behave similarly to the full sample, with the exception of a higher than expected share of manufacturing value added in the 1970's and 1980's, given these countries income and population. However the result for African countries is very strongly influenced by the inclusion of Mauritius which is an outlier, given its successful focus on manufactured exports. When

it is excluded the positive impact on manufacturing share remains only for the 1970s, which is the effect of protected industrialisation through import substitution. In the decades of the 1990's and 2000's for the African countries there is a strongly significant negative trend of a declining manufacturing value –added and employment share, after controlling for income and population. In the 1980's the period term for the manufacturing share is negative but insignificant, whilst the employment share remains both negative and significant. Broadly similar trends are found in the Latin American, but not for the Asian countries in the sample, where all the time period effects are positive.

These results match the analysis in MacMillan et al (2014) table 5 which shows that in explaining the growth of labour productivity due to labour reallocation between sectors, what they call the structural change term, the dummy variables for African and Latin American countries are negative and significant, reflecting the relative decline of manufacturing in these economies .<sup>9</sup> The key explanation offered for the success of manufacturing in Asia, in terms of maintaining its share in output and employment, is its success in developing manufactured exports, since when the data are split between economies that export manufactures (more than 75% of merchandise exports) and those that do not the time period effects are different with the exporting economies showing positive rather than negative signs on the time period dummies (Rodrik 2015).

In terms of development within the sector there is evidence that due to the wide dispersion in productivity between firms in Africa , it is intrinsically less dynamic than manufacturing sectors elsewhere. Rodrik (2013) has raised the issue of convergence in productivity growth within a sector as producers learn to catch up with the technology frontier. Convergence can be either

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<sup>9</sup> It is notable that this must in part reflect resource endowments since when a variable for the share of raw materials in exports is included the country regional dummy for Africa (and also for Latin America) loses its significance and its negative sign.

unconditional, so there is catch-up or conditional with the size of the catch-up conditioned by the initial position.<sup>10</sup>

He conducts this analysis at a disaggregate level within manufacturing alone showing considerable scope for both types of convergence with the conditional coefficient typically double that of the unconditional, as country-specific conditions play a large role. The significance of this is that catch-up productivity growth in the sense of approaching best practice levels holds regardless of the country's policy environment, although the speed of convergence will be affected by policy. He finds that convergence applies only within manufacturing not elsewhere. In Rodrik (2014) he confirms that convergence within manufacturing is found in African countries as well as internationally.

Weiss and Jalilian (2015) repeat this analysis with a slightly different data set. The focus is not on intra-manufacturing differences, but on whether manufacturing was different from other sectors in terms of convergence potential. Unconditional convergence is not confirmed for any of the productive sectors for the whole dataset, as there is no statistically significant relationship between the sectoral growth of labour productivity and its initial level and the signs of the parameter estimate for agriculture and manufacturing are

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<sup>10</sup> Unconditional convergence is formulated as:

$$cg_{ij} = \alpha + \beta \ln y_{ij} + \varepsilon$$

Where  $cg$  is the compound rate of growth of labour productivity for sector  $j$  in country  $i$ ,  $y$  is the initial level of labour productivity for the sector and  $\varepsilon$  is the stochastic term.

For unconditional convergence to hold,  $\beta$  should be negative and significant. Similarly conditional convergence, controlling for features of an economy, is tested by an equation of the form:

$$cg_{ij} = \alpha + \beta_1 \ln y_{ij} + \mu Z_i + \varepsilon$$

where  $Z_i$  is a set of country specific controls. Conditional convergence requires that  $\beta_1$  be negative and significant.

positive, which goes against convergence. It is only confirmed for construction and weakly for transport and communications. However if African countries are excluded there is now some support weak support with negative coefficients on initial productivity for manufacturing, mining and public utilities. Once a test for conditional convergence is applied the picture changes.<sup>11</sup> For the full dataset the sign on initial labour productivity is now always negative and is significant in public utilities, construction and transport and communications and in the aggregate. When African countries are excluded conditional convergence is confirmed strongly for manufacturing and in the aggregate. It is also found in public utilities. In the non-African sample once we control for institutional quality convergence is faster and more significant in manufacturing than in public utilities. Thus outside Africa catch-up productivity growth is found in manufacturing and unlike the results of Rodrik (2014) Africa does appear to behave differently in terms of productivity convergence.

### **III Tanzanian Experience with Industrialisation**

Tanzanian experience mirrors much of that of the rest of sub Saharan Africa . At independence in 1961 the manufacturing sector was very small with 220 registered manufacturing enterprises employing 10 or more workers, and a few large firms like Coca Cola, East African Breweries, Tanganyika Packers, British American Tobacco, Metal Box and Bata Shoes foreign owned and the remainder small local enterprises. Industry, including mining as well as manufacturing, was estimated to contribute no more than 4% of GDP (Skarstein and Wangwe, 1986). Discussions of industrial performance in Tanzania conventionally divide the post-independence period into four phases

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<sup>11</sup> Only one control variable a composite institutional quality measure is applied on the grounds that this is correlated with other plausible controls.

- Early post-Independence 1961-67
- State-led industrial development 1967- 85
- Industrial development under Structural Adjustment 1985-95
- Post reform development agenda 1995 onwards.<sup>12</sup>

In the early 1961-67 period there was no attempt to change the structure of the economy or the pattern of ownership. Two development plans were introduced to encourage diversification of the economy, but there was little regulatory control, a relatively open trade policy and foreign investment was promoted, through tax incentives and import tariff protection. There was some expansion of manufacturing with a 50% increase in the number of manufacturing establishments 1961-65 and a rise in manufacturing's share in GDP to 6.6% in 1966 (Wangwe et al 2014)<sup>13</sup>

In the early 1960's more than 75% of industrial investment came from the private sector. However, the indigenous private sector was very weak so that ownership was concentrated in either foreign investors or ethnic minority nationals. The phase of state-led industrialisation was to address the problem of who would mobilise the necessary resources by giving this role to the state. The Arusha Declaration in 1967 ushered in a major shift in policy with its emphasis on socialism and self-reliance. In the phase of state led industrial development there were a number of major changes affecting manufacturing. A significant proportion of new investments were made by parastatals, foreign investment was limited to joint ventures with the government, import tariffs were increased and controls on access to foreign currency were introduced. Private

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<sup>12</sup> This categorisation comes from Wangwe et al (2014); see also Morrissey and Leyaro (2015). This section draws heavily on both of these sources.

<sup>13</sup> Over the period 1961-66 manufacturing averaged around 5% of GDP; Morrissey and Leyaro 2015 table 21.2

sector activity was regulated through industrial licensing and a system of price controls was introduced for selected manufactured goods. Whilst the economy was not centrally planned the role of the state in industrialisation increased dramatically with the public sector responsible for 47% of manufacturing employment in 1973, as compared with 15% in 1967 (Skarstein and Wangwe 1986).

This can be seen as the real commencement of the import substitution programme in Tanzania and growth in the protected home market was initially relatively rapid with real manufacturing value added increasing at an average of just below 6% annually 1967-79. The sector reached a peak of 10% of GDP in 1972, as compared with 8.4% in 1967, although it has fallen back again to 8.5% by 1979.<sup>14</sup> The 10% share of GDP for manufacturing has still not been exceeded more than 35 years later.

There were limits to this expansion in part due to its reliance on imported inputs. This was recognised in the launch of the Basic Industry Strategy at the end of this period which aimed to strengthen domestic linkages, shift production towards intermediates and capital goods and reduce reliance on imported inputs. The Strategy was to run for 20 years from 1975 with the ambitious targets of an annual average industrial growth rate of 8.8% and a major structural transformation so manufacturing's share in GDP would reach 18.8% by 1995. The Basic Industry Strategy reflected one response to what emerged in the late 1970's as a serious balance of payments constraint on growth.

However its implementation would have required heavy investment in a range of producer goods and by the late 1970's the macro problems facing the economy meant

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<sup>14</sup> Morrissey and Leyaro 2015: 387. The World Development Indicators have different figures. They show manufacturing growing on average by 5.1% 1965-80 and averaging 11.9% of GDP 1971-80; see Lawrence (2015) table 20.1. NBS also has different figures and shows a peak share of 13% in 1975; see Wangwe et al figure 5.

that such a programme was financially unsustainable for the government (Lall and Wangwe, 1998).

On the other hand, there were also limits to the expansion in the 1970's created by a combination of trade policy, exchange rate management and unfavourable external shocks particularly the rise in the oil price. Manufacturing was aimed at the domestic market and exports of manufactured goods were no more than 10% of total merchandise exports in the 1970's and the sector was a strong net user of foreign exchange. The exchange rate was managed by relatively high import tariffs and controls on access to foreign currency for both current and capital account purposes. This created high effective protection for manufacturing and by the early 1980's a rising overvaluation of the currency, both of which exacerbated the foreign exchange problem. One estimate put the overall effective protection for manufacturing as high as 470% in 1984, which suggests that the growth rate of the 1970's had been artificially inflated by the excess of domestic prices over world levels (Lundahl and Ndulu 1987). Similarly there are estimates of exchange rate overvaluation from 1980 onwards which put the overvaluation rising from around 40% 1981/82 to as much as 80% in 1985 (Hobdari 2008). As an import intensive activity manufacturing was bound to be seriously constrained in this macro-economic climate.

Initially the government addressed these macro problems with a 'home grown' adjustment programme and an export retention scheme allowing exporters to access some of their export earnings to import intermediate goods. After the weak response to these measures it turned to the international financial institutions and committed to a Structural Adjustment Programme in return for balance of payments support and funds

for enterprise restructuring. The programme reforms were embodied in the Economic Recovery Programme (ERP) which commenced in 1985. Whilst the thrust of the reforms was primarily macro, the change in trade policy in particular created a new environment for industrialisation for the period 1985-95. Import tariffs were reduced, the foreign exchange licensing regime was liberalised and a crawling peg exchange rate was introduced to reduce the overvaluation. The focus on state –led industrialisation was reversed with privatisations of the manufacturing parastatals where buyers could be found.

The initial outcomes for manufacturing were modest at best. Its GDP share averaged 8.7% 1986-95 and its average annual growth 1981-90 was 3.6%, falling to 2.6% 1991-2000.<sup>15</sup> Some enterprises were restructured, but some closed. The textile sector was particularly badly hit by the influx of low cost, some second hand, textile and clothing imports with the closure of 22 out of 24 mills by 1993.<sup>16</sup> Privatisation reduced the number of state owned enterprises so that by the mid 2000's they accounted for no more than 10% of all manufacturing enterprises.<sup>17</sup>

The period from 1995 onwards is described as a 'return to industrial development as a development agenda' (Wangwe et al 2014) on the grounds that it reflects a renewed emphasis on industrialisation but in the post-Structural Adjustment context of a focus on markets and private sector development. The planning framework for industrial development was to be the 25 year Sustainable Industrial Development Policy for

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<sup>15</sup> The GDP share comes from Morrisey and Leyaro 2015 table 21.2; annual growth comes from Lawrence 2015 table 20.3, but the original source is the World Development Indicators.

<sup>16</sup> Wangwe et al (2014: 12)

<sup>17</sup> Cited in Morrisey and Leyaro (2015: 388)

Tanzania (SIDP 2020) launched in 1996. This had short, medium and long term components. In the short term 1996-2000 the aim was to rehabilitate and consolidate existing capacity. In the medium term 2000-10 the goal was to create new capacity in areas of with the potnetial for competitiveness, with an emphasis on intermediates and light industry. In the longer run 2010-20 the aim was to develop more sophisticated products, including capital goods.

The private sector was to be the driving force behind this program and incentives, such as those enshrined in the Export Processing Zones Act passed in 2002 were offered to increase private sector investment. To support these investment measures were taken to improve the 'business environment', for example by investing in infrastructure and revising regulatory controls. Although ambitious targets such as the creation of a semi-industrial economy comparable to that in middle income economy by 2015 have been set, but it is unclear how far through this type of planning the government has managed to influence industrial performance.<sup>18</sup>

Manufacturing performance after 1995 was initially weak, but started to improve after around 2000, averaging over 8% annually 2000-2013 (as compared with 2.6% annually 1991-2000).<sup>19</sup> In part this modest revival would have been due to a stronger macro-economic performance in turn partly linked with favourable commodity prices for traditional exports. None the less the contribution of this growth to structural change has not been very significant. Manufacturing as a share of GDP was estimated to be still below 9% in 2011, which was a little below Kenya, Malawi and Mozambique, but above that of Uganda, although recent growth rates have been higher in Tanzania as compared

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<sup>18</sup> Morrisey and Leyaro (201: 392-5) discuss the various plan documents produced since 1995.

<sup>19</sup> Lawrence (2015: table

with these comparators.<sup>20</sup> Manufacturing structure is based around 'early' industries with agro processing activities food, beverages and tobacco taking around 35% of value added, textiles and clothing 10% and leather goods 8%.<sup>21</sup> Growth since 2000 has been concentrated in activities using local inputs like paper and paper products, food and beverages, textiles, tobacco and non-metallic minerals. Activities like electrical machinery, engineering and vehicle repair have declined.<sup>22</sup> Employment growth is recognised as slow with manufacturing currently employing less than 5% of the workforce. It is also skewed within manufacturing with the largest 40 companies employing 36% of manufacturing workers which is estimated to be the employment created by 24,000 micro enterprises.<sup>23</sup> Production remains highly import intensive.<sup>24</sup>

In terms of specific policy for manufacturing Wangwe et al (2014:43) list five major challenges which are very similar to the points made earlier in relation to industrialisation in SSA in general;

- Technical challenges relating particularly to unreliable power supply, outdated equipment and lack of skilled workers;
- Administrative challenges relating to weak enforcement of laws and regulations
- Financial challenges in relation to access to and cost of credit
- Market challenges in relation to strong import competition
- Policy challenges relating to intrusive government regulation.

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<sup>20</sup> UNIDO (2013) table A 3.1. Morrisey and Leyaro (2015) cite a similar figure for 2010.

<sup>21</sup> These figures come from the 2008 industrial survey; see Wangwe et al (2014 table 1). The survey covers 729 registered industrial establishments.

<sup>22</sup> Data cited in Morrisey and Leyaro (2014: table 21.3)

<sup>23</sup> Cited in Morrisey and Leyaro (2014:388)

<sup>24</sup> Wangwe et al (2014:43) report that for the firms they survey on average 70% of inputs are imported.

Evidence on some of these challenges is provided by the survey of Fafchamps and Quinn (2012) which compared small and medium enterprises SMEs in five sub-sectors of light manufacturing in China and Vietnam with three African countries, Ethiopia, Tanzania and Zambia. Tanzania stands out in a few areas, even relative to the other African countries.<sup>25</sup> Firms tended to be smaller with a very low share of limited liability companies and the highest share of unregistered firms. Firm owners have the lowest rate of educational attainment. Reflecting these characteristics the Tanzanian firms have a much lower rate of innovation, both product and process innovation, than do firms elsewhere. Also firms in Tanzania have much larger share of casual workers, which is not due the effect of smaller firm size, with nearly 80% of workers having no more than primary education. The incidence of power outages is high and a high proportion of firms report competition from imports.<sup>26</sup> The bulk of funding for investment comes from internal funds and retained earnings, although the share is not much out of line with that in the other four countries, with a very low proportion of firms in each of the African countries having borrowed from a bank. The nominal cost of finance for those that do was considerably higher in the African countries than in China.<sup>27</sup>

#### **IV Firm level evidence on manufacturing in Tanzania**

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<sup>25</sup> The focus here is just on SMEs, but given differences in size across the sample the authors caution that the impact of size needs to be controlled for statistically.

<sup>26</sup> The proportion is higher than in Ethiopia and Zambia although both of these are landlocked countries which natural protection.

<sup>27</sup> The averages rates reported are 4.8% for China, 14.0% in Tanzania and Vietnam, 10% in Ethiopia and 21% in Zambia.

To provide detailed information on the cost competitiveness of manufacturing in Tanzania the chapter draws on firm level data collected as part of the World Bank study *Light Manufacturing in Africa* (Dinh et al 2012). This involved detailed firm surveys from a number of East African economies in an attempt to assess competitiveness of these firms relative to imports of competing manufactured goods from China and Vietnam. The surveys were not comprehensive and the results are not necessarily representative but the general picture is that many local manufacturers in Africa, although possibly less in Tanzania, are struggling against Chinese competition. The exercise reported here covered 3 or 4 firms per product line in Tanzania and the cost data examined are a weighted average for each line. Hence no more than 20 firms were examined.<sup>28</sup>

Table 9.1 gives data on wages in a number of East African economies relative to those in China and Vietnam taken from surveys of formal sector firms in 2009/10. Tanzania emerges as the highest wage of the three African economies with wages well above those of Ethiopia. Average wages vary between firms producing different products, but all African wages are well below the level in China. For Tanzania, apart from wheat processing, wages are less than half the Chinese level. However in some instances Tanzanian wages are above those in Vietnam.

Table 9.2 gives data from the same survey on productivity levels (in terms of pieces per employee per day). China has double African productivity in the manufacture of polo shirts and an even greater advantage in the manufacture of chairs. Tanzania has the highest labour productivity of the African firms in wheat processing and leather casual shoes. In

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<sup>28</sup> One of the authors was involved in the analysis of this data, which was published originally on the World Bank website as volume 2 of Dinh et al (2012).

both of these goods its productivity is higher than in China. Hence in relation to Tanzanian competitiveness in terms of relative wages and productivity the picture appears mixed.

Table 9.1 Wage comparisons

Wages/month US dollars	Ethiopia	Tanzania	Zambia	Vietnam	China
Polo shirts	39	128	<i>n.a.</i>	103	269
Wooden chairs	46	100	127	112	231
Leather loafers	26	113	<i>n.a.</i>	91	308
Metal working	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	129	231
Wheat processing	42	116	83	56	120

Source: Dinh et al (2012) unpublished Volume 2 Table A1; *n.a.* is not available

Table 9.2 Productivity comparisons

Pieces/employee/day	Ethiopia	Tanzania	Zambia	Vietnam	China
Polo shirts	12.1	11.7	<i>n.a.</i>	12.3	24.8
Wooden chairs	0.3	0.5	1.2	1.6	4.9
Leather loafers	3.4	4.7	<i>n.a.</i>	3.6	3.9
Metal working	10	<i>n.a.</i>	<i>n.a.</i>	26	17
Wheat processing	1.1	11.6*	0.9	0.9	0.2

\*Highly automated

Source: Dinh et al (2012) unpublished Volume 2 Table A2

Differences between countries in input and logistics costs must be added to obtain a comparison of factory-gate costs. Once this is done it is clear that for most products the advantage of low wage costs is offset by a combination of lower labour productivity and higher input and logistics costs. Only in the case of leather goods can African firms in all countries compete on cost terms with China. Tanzanian firms have a slight cost advantage over Chinese firms in the metal product covered.

Table 9.3 summarises the cost differences – distinguishing between the impact of labour, productivity, input costs and logistics costs – between African firms and Chinese firms making a comparable product. The difference between firms in the different African countries by these categories and Chinese firms is given as a percentage of the average cost in China. Hence, for example, on average across all products covered lower wages give a cost advantage of 16% of total Chinese costs in Ethiopia, 9% in Tanzania and 8% in Zambia. In the case of Tanzania and Zambia this advantage is offset by the labour productivity differential which is 13% and 9% of Chinese costs, respectively. In all cases input costs and logistics costs are higher for African firms, so these reinforce the productivity disadvantage. In the case of Tanzania the net effect of lower wage costs but lower productivity and higher input and logistics costs was to make two product lines, leather shoes and wheat processing cost competitive with Chinese goods. The comparison here is costs in Tanzania against costs in China so trade costs and import tariffs will give a natural protection to local producers.

Table 9.3 Cost Differences Relative to China

Differential as % of Chinese production cost							
		Polo shirts	Leather goods	Wooden chairs	Metal working	Wheat processing	Average

Wages	Ethiopia	-8	-37	-17	-10	-10	-16
	Tanzania	-4	-24	-8	-4	-4	-9
	Zambia	-5	-24	-5	-2	-2	-8
Average		-6	-28	-10	-5	-5	-11
Productivity	Ethiopia	3	2	40	5	-1	10
	Tanzania	6	0	60	0	-2	13
	Zambia	4	0	50	-10	-1	9
Average		4	1	50	-2	-1	10
Inputs	Ethiopia	4	2	87	14	28	17
	Tanzania	3	1	14	na	32	12
	Zambia	4	3	50	25	49	26
Average		3	2	50	19	36	22
Logistics	Ethiopia	6	5	15	6	18	10
	Tanzania	3	3	na	na	7	4
	Zambia	7	3	18	8	21	12
Average		6	4	17	7	15	10
Total cost	Ethiopia	5	-28	125	15	35	30
	Tanzania	8	-20	66	-4	33	27
	Zambia	11	-16	113	20	67	39
Average		8	-21	107	19	45	31

Note: negative sign indicates cost lower than that of China

Source: Dinh et al (2012) unpublished Volume 2 p 32.

Economic efficiency assessments of this local production require efficiency pricing of inputs and outputs. To assess this the study used a version of the domestic resource cost indicator (DRC) which estimates the domestic resources at efficiency prices required to generate a dollar of foreign exchange either through import substitution or export (Krueger 1966, Bruno 1972). The efficiency pricing approach applied was approximate and involved removing all

identifiable taxes and subsidies, deducting all identifiable imported inputs from the foreign exchange value of output and applying a capital recovery factor to estimate an annual capital charge. In this analysis Chinese costs are at c.i.f. prices but exclude any import tariff. The value of domestic resources was converted into dollars at the actual exchange rate and compared with the net foreign exchange effect from production.

Thus DRC is  $(DR*ER)/FE$  and efficiency requires  $DRC < 1$

Where  $DR$  is the per unit domestic resources used in production,  $ER$  is the exchange rate and  $FE$  is the per unit net foreign exchange effect.

In theory  $ER$  in this calculation should be the long-run sustainable real value and misalignment of the actual rate  $ER$  can give misleading results. The analysis tested for the sensitivity of the efficiency results to future values of  $ER$ .

Table 9.4 DRC Summary: Tanzania

Product	Current DRC	Real exchange rate adjustment for competitiveness
Polo shirts	0.61	Competitive
Leather loafers	0.96	Competitive
Wheat milling	1.09	9%
Wooden chairs	2.65	1657%

Source: author's calculations

Table 9.4 gives the summary DRC results for four of the product lines. Two of these were competitive at the time of the study ( $DRC < 1$ ) and one wheat milling required only a very modest productivity improvement or real exchange rate adjustment of 9% to be so.

## **Conclusions**

Broadly manufacturing retains a potential to contribute significantly to economic growth at Africa's income level. There are many arguments to explain why Africa tends to remain an outlier in discussions of industrial performance. Wage costs are often not low enough to offset a combination of low productivity and high infrastructure and related transaction costs and lack of skills and contribute to lower quality levels. Tanzania shares many of the challenges faced by other sub-Saharan African countries. None the less the firm level evidence presented here suggests that in parts of manufacturing in Tanzania performance is perhaps not as weak as is sometimes suggested. In relatively simple labour intensive activities (shirts and leather goods) and resource-based (wheat milling) the 'representative firm' data once adjusted to economic terms suggests underlying efficiency and thus competitiveness. This is a competitiveness in 'early' industries that is expected at relatively low income levels and is a far cry from the expansion of more technologically sophisticated goods, but does suggest that there is potentially a competitive core of activities which can be built on in the future. It will not easy be to move into more sophisticated products which require a more sophisticated range of production capabilities and the challenge for policy in Tanzania is to create a framework that both allows access to foreign technology and investment whilst at the same time supporting the development of local production capability.

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