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Increases in clothing exports after 2000 signaled the first incidence of large-scale manufacturing exports from sub-Saharan Africa. Using firm-level information, this paper explores the potential of clothing exports for poverty reduction and further growth as seen in other low income countries. It shows that the garment exporting industries in Kenya and Madagascar have contributed poverty reduction in the short term by providing mass employment for female and less educated workers with wages beyond the poverty line. However, the long-term impact is not certain. High production costs and limited development of local firms weaken potential for further growth in the competitive world market. Upgrading of the market and improvement of efficiency are required to remain competitive for African industries, and governmental support for local participation are needed to facilitate technology transfer.

Keywords: manufacturing exports, poverty reduction, FDI spillover, productivity

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Clothing Exports from Sub-Saharan Africa: Impact on Poverty and Potential for Growth^{*}

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May 2008

Abstract

Increases in clothing exports after 2000 signaled the first incidence of large-scale manufacturing exports from low-income countries in sub-Saharan Africa. Using primary and secondary firm-level information, this paper explores the potential of clothing exports for poverty reduction and further growth as seen in other low income countries. It shows that the garment exporting industries in Kenya and Madagascar have contributed poverty reduction in the short term by providing mass employment for female and less educated workers with wages beyond the poverty line. However, the long-term impact is not certain. High production costs and limited development of local firms weaken potential for further growth in the competitive world market. In the Kenyan industry, high labour costs have pushed production costs up while productivity is only slightly lower than that of Asian industry. High labour costs as well as uncertainty of market access have discouraged local firms from participating in the export market. Upgrading of the market and improvement of efficiency are required to remain competitive for African industries, and governmental support for local participation are needed to facilitate technology transfer.

Keywords: garment industry, poverty reduction, productivity, FDI spillover, Africa

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1. Introduction

Except for a few countries, the manufacturing sector has been stagnant in sub-Saharan Africa. Its share in the economy, particularly in exports, is significantly smaller than other low income countries, and this shows a sharp contrast to Asian countries. In East Asian countries, labour-intensive products such as clothing, shoes, and wooden products have been main sources of export growth in the early stage of industrialization, and this has contributed to the reduction of poverty through provision of employment to unskilled workers (World Bank [1993], Pack and Westphal [1986]). The same process occurred in other Asian and Latin American countries in the 1980's and 1990's, and recently even reached low income countries such as Vietnam and Cambodia. The wave finally came to Africa after 2000, triggered by the free duty access to US markets: Africa Growth Opportunity Act (AGOA). Foreign investments have been made in the garment industry¹ in several African countries, specifically Kenya, Madagascar, Lesotho, and Swaziland, and exports of clothing to the US market sharply increased after 2000. This paper investigates whether the emergence of clothing exports will lead to poverty reduction and economic growth in Africa.

There are several reservations with regard to replicating the Asian experience in Africa. First, while the clothing industry provides large employment to unskilled and female workers, it is criticized for its low wages and poor working conditions. It is argued that the intense competition in the world textile market gives strong pressure of cost reduction for garment firms, as called "immiserising growth" (Kaplinsky [2000]). Second, as the performance after termination of the quota system in world textile market shows, there is a serious concern about the competitiveness of African clothing within the free market system. Since the rapid growth of exports was initiated by the non-duty and non-quota status given to African products, the termination of the quota system in the world textile market has partly spoiled that advantage, and the growth trend has been disrupted in some African countries. The literature suggests that an inefficient business environment and poor

¹ In order to differentiate it from the spinning and weaving industry, the industry (firm) specializing in sewing and knitting processes of clothing production is called the garment industry (firm) in this paper.

technical knowledge in local firms has hindered development of the manufacturing sector in Africa (Collier and Gunning [1999], Lall [1999], Biggs et al [1995]). Third, in the process of growth, local firms have played an important role in most garment exporting countries, but they are not active in Africa. Local firms not only supported multinational firms as subcontractors, but they finally replaced multinational firms. This is also important for the transfer of technology and knowledge, which is a source of sustained economic growth in theory as well as the Asian experience. It is reported that local firms gained knowledge of technology, markets, and management from multinational firms, and such technology transfer built the industrial base of Asian countries (World Bank [1993], UNCTAD [2002]).

Reservations above are examined in this paper using firm level information including firm data collected in Kenya and Bangladesh in 2003 and the author's interviews in Kenya and Madagascar from 2003 to 2006. The impact of poverty is discussed with respect to whether employment provided sufficient income opportunities for the poor. Competitiveness of African products is analyzed by comparing production costs between Kenyan and Bangladeshi firms, the latter being successful garment exporters. Productivity and factor costs are also compared between the two countries as a determinant of competitiveness. Local participation and technology transfer in the Kenyan and Malagasy garment industries are reported based on the author's interviews. In order to understand the background of local firm response, the capacity and incentive for learning new technology is analyzed for the case of Kenya.

In the next section, the recent trend of garment exports in Africa is summarized, and the impact on poverty is discussed in the third section. Competitiveness of the African garment industry is analyzed in the fourth section, and this is followed by an assessment of local participation in the fifth section. Conclusions are presented in the last section.

2. Overview of Clothing Exports from Africa

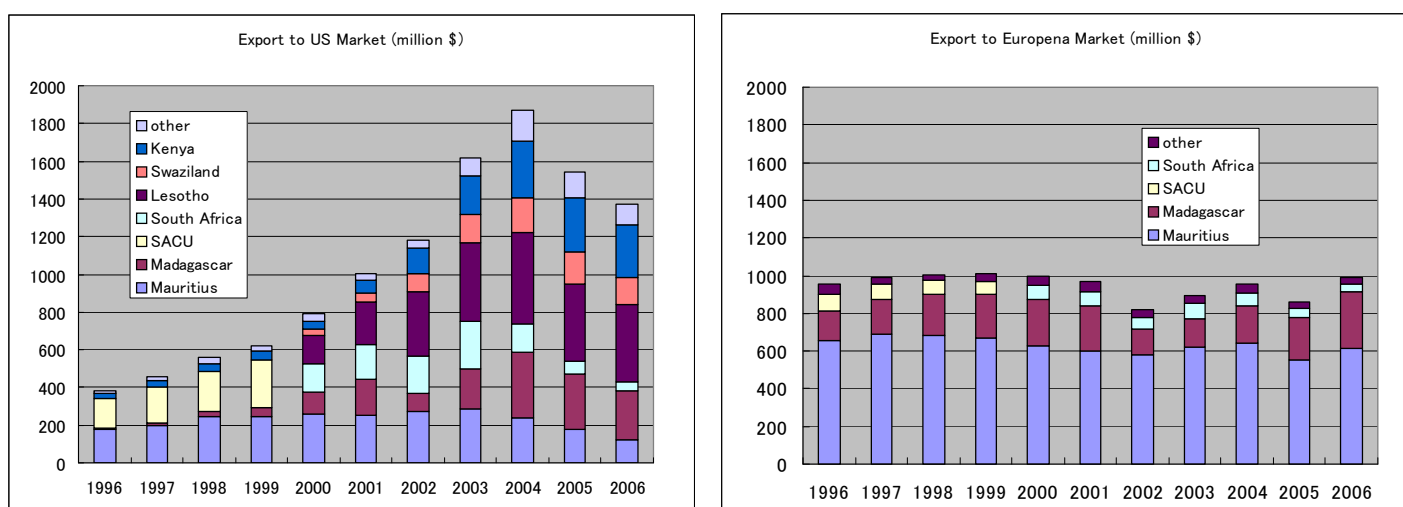
Export of textile products started in South Africa and Mauritius in the 1980's. Particularly Mauritius is a typical replication of the Asian model, which foreign direct investment (FDI) initiates export to US and EU markets. FDI first came from Hong Kong, which was seeking the quota free status of Mauritius, and this was followed by investment from East Asia, Europe, and domestic sources. Clothing exports were quite successful and realized rapid growth of GDP per capita with large-scale employment (Bowman [1991]). As wages rose during 1990's, the Mauritian industry shifting production to Madagascar, and consequently, Madagascar became the third largest garment exporter in Africa in the middle 1990's. The South African industry also suffered from high wages, and many firms shifted to Lesotho where wages were lower. By the 1990's, however, only a few countries exported to the non African markets, and production was very small relative to Asian countries.

The African Growth and Opportunity Act (AGOA) brought about drastic change. It provided duty-free and quota-free access for African textile products with very generous rules of origin, which allow poor countries to use imported fabrics. Such access led to massive investment in some privileged countries such as Kenya, Lesotho, Swaziland, and Madagascar from East Asia, South Asia, Mauritius, and South Africa. During 2000-2005, 31 investment projects were undertaken in the textile sector in Lesotho, and 17 projects were conducted in Swaziland mainly by Taiwanese and South African firms.² Lesotho benefited most from this opportunity; and it became the largest African exporter to the US market. Its textile exports (about 450 million US dollars in 2004) accounted for 68% of all commodity exports. In Madagascar, despite temporal interruption caused by political turmoil in 2001, East Asian investment surged after the enactment of the AGOA. Clothing exports further grew, and in 2004, they accounted for 56% of all commodity exports. In Kenya, 30 foreign firms operated in Export Processing Zones, and they exported 300 million dollars in 2004 (EPZA [2005]). To a lesser extent, investment flowed into Namibia, Botswana, Malawi, and

² Documents created by Lesotho National Development Corporation and Swaziland Investment Promotion Authority.

other countries. Clothing exports from Africa to the US and EU doubled from 1997 to 2004 and reached 2.8 billion dollars (Figure 1). Due to labour-intensive characteristics, it had much larger impact on employment. Within the four main emerging exporters, it is estimated that exporting firms created about 222,000 jobs.³

Figure 1 Clothing Exports from Africa



Note: Exports from the Southern African Custom Union are separated by individual country after 2000.

Source: UNComtrade, report by importers.

Growth trends changed after termination of the Multi-Fibre Agreement (MFA) in 2005. Abolishment of the quota system changed the trade pattern, and this resulted in a growth of Asian firms and a fall in African firms, particularly for the US market. Although quotas for China were revived in the form of voluntary regulation, exports from Africa dropped by 17% in 2005. It was reported that shrink of the sector brought loss of 20,000 jobs in Lesotho and Swaziland.⁴ Currently, quotas set by the South African government for Chinese imports have partially mitigated drastic reductions in production, but Lesotho and Swaziland industries will be in a critical phase after 2008 when quotas for Chinese products in the US, EU and South African markets will be swept away. The

³ Employment figures are based on EPZA [2005] for Kenya, data from the Ministry of Industry and Trade (cited in Mamininarivo [2006]) for Madagascar, and documents created by Lesotho National Development Corporation and Swaziland Investment Promotion Authority.

⁴ Documents created by Lesotho National Development Corporation and Swaziland Investment Promotion Authority.

Malagasy and Mauritian industries also received an adverse impact, but steady demand in the European market has compensated the loss. Both industries recoded expansion of exports in 2006.

3. Impact on Poverty Reduction

Effect of development of garment industry on poverty reduction is questioned mainly from its low wages and poor working condition. Global value chains literature argued that asymmetric structure of an industry, for example intense competition among of suppliers and oligopoly within buyers, created asymmetric distribution of value added among the value chains; buyers take a lion's share of value added of final products and suppliers get smaller share (Kaplinsky [2000]). Textile industry is seen as a typical case of asymmetric structure with countless number of garment factories and a few large multinational retailers because of easy entry to sewing process. Assuming the large pool of cheap labour in the world, the asymmetric structure will be maintained and labour costs, a part of value added, will be kept low. Basu [2003] argued that a government of developing country is not motivated to improve wages and working conditions of multinational companies, unless all governments in the world effectively enforce labour legislation, and capital flight to a less regulated country is not possible.

However, if garment employment provides better income opportunity for the poor who have no choice other than informal sector, it has positive impact on poverty reduction at least in short term. We will see whether clothing exports has provided such opportunity.

3.1 Employment and Entry Barriers

Because of its labour-intensiveness in technology, the garment industry provides greater employment opportunities relative to output. Since exporting firms do not compete with local firms supplying domestic and African markets, a most of the 222,000 jobs created in the sector reflect net growth in employment. These jobs have led to a significant increase in the amount of formal employment in these countries where informal jobs are dominant. For example, in Madagascar, 108,000 jobs were created in the labour market with very small formal employment. 24,000 jobs

created in the Swaziland garment industry account for about 40% of total formal employment. Even in Kenya, where the industrial base is relatively large, employment in garment exporting firms corresponds with 3% of the employment in the private sector in 2004.

Female workers dominate production jobs, namely supervisors, operators, and helpers, which comprise the majority of employment in garment firms. In Kenya, around 80% of operators and helpers, and 60% of supervisors working in Export Processing Zone (EPZ) are female (Table 1). The dominance of female worker is more prevalent in EPZ sector than local garment industry.

Employment is open to workers with less education and skill. Although the majority of EPZ firms require primary or secondary education, no educational attainment is needed for 18% of the firms for operators and helpers, and even for supervisors, 12% of the firms do not require education (Table 2). Given that 18.1% of females in Nairobi have no education or primary incomplete (Central Bureau of Statistics et al [2004]), the target of garment employment is neutral with respect to education. As for skill, 82% of firms do not require previous experience in garment industry for helpers, and all firms need less than one year experience for operators. Relatively low requirement of education and skill is resulted from the nature of sewing skill, which can be developed in-house training (mainly on-the-job). While some firms are open to uneducated people for all three types of job, other firms set higher requirement for higher position; 89% of firms require supervisors to have secondary or higher education. This suggests that workers with little education may have a difficulty in promotion.

Table 1 Ratio of Female to Total Employment (percentage)

	EPZ Firms (N=17)	Local Firms (N=58)
Managerial	30.1	18.5
Other Officer	39.3	34.5
Engineer	0.0	10.0
Designer	43.5	21.3
Supervisor	58.8	36.1
Operator	82.6	54.5
Helper	78.2	60.5

Source: Firm survey in 2003

Table 2 Educational Requirements in EPZ Firms (percentage, N=17)

	Supervisor	Operator	Helper
No Requirement	11.8	17.7	17.7
Primary	0.0	35.3	52.9
Secondary	52.9	41.2	23.5
Post-Secondary	35.3	0.0	0.0
Other	0.0	5.9	5.9

Source: Firm survey in 2003

3.2 Wages

A job in the garment industry is in general regarded as a low-paying job. In Kenya, the average monthly wage of EPZ garment firms was 82.9 US dollars in 2003, while the average wage in the manufacturing sector was 142.3 US dollars (Central Bureau of Statistics [2004]). To reduce heterogeneity in worker characteristics by industry, a comparison with wages of local garment firms was made⁵ (Table 3). It indicates that with the exception of supervisors with one to five years experience, EPZ firms pay less than local firms by up to 25 percent. Since there is a significant gap in lifetime working experience (total experience in garment sector) between workers in EPZ and local firms (the average experience operator of EPZ firms is 1.7 years and that of local firms is 4.6 years), the wage gap partly reflects the skill of workers. It follows that EPZ firms provide employment for less experienced workers with lower wages in comparison with local firms.

Then, the wage level relative to the poverty line is critical to understand the impact on poverty reduction. The monthly wage of operators in EPZ firm ranges from \$200 to \$237 in purchasing parity rate (5300 to 6300 Kenya Shillings) depending on the experience⁶ (Table 3), which is far above the international poverty line, 30 or 60 dollar as well as national poverty line, 3421 KSh.⁷ Also the average wage of helpers, \$175 to \$195 in PPP rate (4700 to 5200 Ksh), is higher than the poverty lines. As most of helpers promote to operators within eight months, wage of operator can be regarded as a standard wage for a less educated female worker. It is also notable that no gender

⁵ In this comparison, worker characteristics are only partially controlled, but heterogeneity is much smaller when compared with the other sector.

⁶ Reported wage information was obtained from managers. To confirm bias of the information, we also interviewed workers at their home and found that there were no unreasonable gaps, though manager's reply may be slightly upward biased.

⁷ Poverty line for urban area is estimated from the official estimates of national poverty line in 1997 by incorporating price change until 2003 (Government of Kenya [2000a]).

discrimination is found in the EPZ sector wage. Table 4 showed that there is little wage gap by gender except one category, while in local firms male wages are higher than female wages for operators and helpers. It is thus evident that the average wage for female operator is sufficient for more than three adults to live at \$2 per day, and in conservative estimates, it can feed herself and one child on the national poverty line. In the case of Madagascar, a labour market study showed that wages of the firms in Zone Franche (export processing zone) were significantly higher than informal sector wages, and that there were no significant gender gaps while informal jobs shows a large gap (Glick and Roubaud [2006]). Overall, though garment job is less paid than other formal job, wage is well beyond the poverty lines, in particular by the international standard, and it is open to less educated and unskilled workers and less biased by gender.

Table 3 Average Monthly Wage by Position and Experience
(upper: dollar in exchange rate, middle: dollar in purchasing parity rate, lower: Kenya shilling)

	Supervisor		Operator		Helper	
	less than 1 yr	1-5yr	less than 1 yr	1-5yr	less than 1 yr	1-5yr
EPZ Firm	147.7	180.6	67.5	80.1	59.2	65.8
(N=17)	437.6	534.9	200.1	237.2	175.3	194.8
	11662.3	14254.0	5331.6	6322.3	4672.5	5192.1
Local Firm	164.6	140.1	87.1	89.3	79.5	66.5
(N=57)	487.6	414.9	257.9	264.4	235.4	197.1
	12993.8	11056.7	6872.3	7046.1	6272.2	5252.3

Note: Experience indicates years worked in current employer. Due to young age of EPZ firms, information for workers with more than 6 years experience is not reported.

Source: Firm survey in 2003

Table 4 Female/Male Wage Ratio

	Less than 1 yr		1-5 yrs	
	EPZ (N=17)	Local (N=57)	EPZ	Local
Supervisor	1.03	1.57	0.87	1.12
Operator	1.08	0.91	1.02	0.92
Helper	1.02	0.83	1.01	0.72*

* Statistically different from one at 5% level.

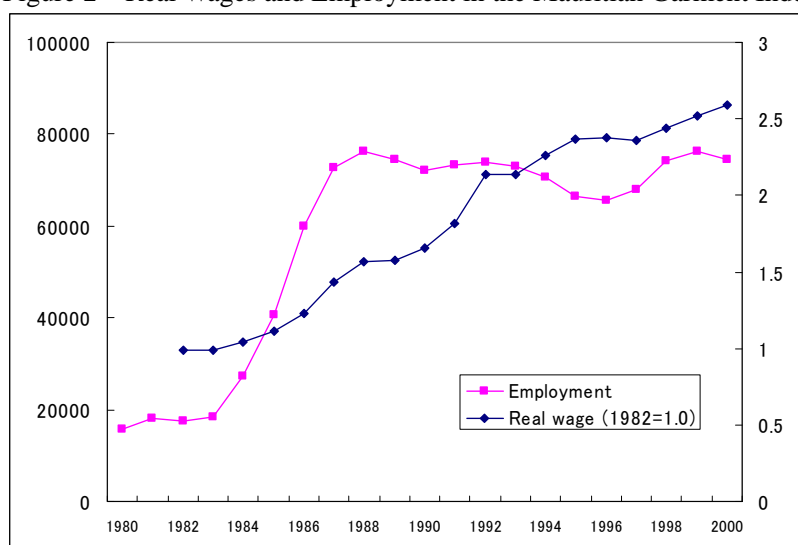
Note: Unpaired ratio

Source: Firm survey in 2003

Prospective of wage increases have also been a concern. In the case of Kenya, it is reported that the nominal wage of operators rose by 20.4 percent from 2003 to 2005, but real wages fell by 4.5

percent. The study, using Malagasy labour survey data, showed that wages for unskilled workers in the Zone Franche sector did not grow despite considerable increases in wages for skilled labour (Nicita [2006]). Since most helpers are promoted to operator (some to supervisor) after some experience, even poor people can get wage increases due to promotion. In terms of wage changes without promotion, however, evidence is mixed; Malagasy case imply that worker will have wage increase once she promotes to an operator,⁸ while Kenyan case reported no increase in real term. The Mauritian experience shows that wages rose steadily with 150 % growth from 1980 to 2000 in real terms (Figure 2). It should be noted that industry in Mauritius has remained competitive with such steady rise of labour cost by improving productivity (Subramanian and Roy [2003]) and by shifting from low-end to middle range markets; this is consistent with the argument in global value chain studies. Mauritian case indicates that sustained rise of wages can be seen if a strategic change of industry is taken place.

Figure 2 Real Wages and Employment in the Mauritian Garment Industry



Source: Author's calculation using statistics from the Central Statistic Office [various issues a] [various issues b].

⁸ Though definition of skilled and unskilled is not shown in Nicita [2006], some fraction of operators must be counted as a skilled worker considering the share of skilled worker (46%) in the sample. Then, their result implies operator can have wage rise due to time trend. Nicita [2006] also argued that garment employment is not pro-poor because only 45% of welfare gain is distributed to the poor. However, share of the poor in garment sector is 42% and welfare gain by promotion seems to be counted as gain for the non-poor and thus, gain by the poor may be underestimated.

3.3 Working Conditions

It is criticized that most EPZ jobs in Kenya are for casual workers who work with short contract periods. Only potentially biased information on this issue is available. The average share of permanent workers in total employment replied to by a manager is 73.1% (higher than the local firm average), but many workers have complained about the short contract period and the fear of no renewal. It is at least evident that Kenyan workers are not satisfied with working conditions in the EPZ sector from the fact that large scale labour strikes occurred in 2003 demanding improvement of working conditions including stable employment contract.

Working hours tend to be long, particularly before delivery dates. Workers are occasionally requested to work very late and are forced to stay overnight in the factory due to unavailability of transportation. A Malagasy labour market survey revealed that Zone Franche workers worked longer and quit jobs more frequently than those in other private sectors (Glick and Roubaud [2006]). EPZ firms in Kenya were also accused of not allowing workers participating to labour union.⁹ Because of severe competition in the world market, managers are keen on improving efficiency of production, which intensifies the workload of floor-level workers.

In contrast to the general perceptions, employment in the garment industry provides higher income than work in the informal sector, which is the most likely alternative job opportunity. It benefits particularly female workers, and it is partially open to uneducated workers. Gender and education may affect a chance for promotion to the better-paid positions, but jobs in the exporting sector provide sufficient income to live over the poverty line for the marginalized people. On the other hand, instability of employment contracts and relatively poor working conditions are disadvantages for workers. Also long-term wage increase may not be expected unless the industry takes strategic change in the production and marketing.

⁹ Working condition in Kenyan EPZ firms was improved after the negotiation between union, EPZ firms, employer's association and government. Government enforced labour legislation, unlike Basu's argument, but industry-wide strikes evidently triggered the enforcement.

4. Competitiveness of African Products

Rapid growth of garment exports after 2000 brought a somewhat optimistic view of industrial development in Africa, but cessation of growth trends after the termination of MFA has led to doubts about the competitiveness of African products. It is argued in economic literature that technological backwardness of firms and high transaction costs have caused stagnation of the manufacturing sector in Africa. Based on field studies, technological capability studies found that most African firms use obsolete technology with inefficient management, and attempt little learning, i.e. R&D, improvement in production processes, and training for worker and managers. They argued that lack of an effective technology policy has discouraged learning by firms, and scarcity of skilled workers and lack of technological inflow (typically in the form of FDI) have weakened the capacity of learning (Lall [1999], Biggs et al. [1995], Pack [1993]). On the other hand, microeconomic firm studies have shown that the poor business environment in Africa has adversely affected production in private firms. Weak contract enforcement, inefficient and sometimes anti-productive public service, and poor infrastructures have increased the costs of business and have reduced the efficiency of production (Collier and Gunning [1999]). These views are consistent with the argument that attributed the success of Asia to their high educational levels and better institutions (Rodlik [1994], World Bank [1993]).

Despite wide recognition of the technological backwardness and poor business environment in Africa, however, industry and firm-level studies comparing performance between Africa and other region are scarce.¹⁰ In this section, the competitiveness and performance of African garment firms are compared with Asian firms.

4.1 Productivity and Competitiveness

Competitiveness of garment products is determined by cost, delivery, and quality. For low-priced products that are main products of African firms, cost and delivery are particularly important (Lall

¹⁰ To the author's knowledge, with the exception of Pack [1987], there are no studies comparing costs and productivity of exporting firms in Africa with other developing regions.

and Wignaraja [1994]). African products have a disadvantage in delivery because most fabrics are imported from Asia, and this necessitates an extra 20 to 30 days for transportation. Consequently, African exports consist primarily of basic items for which demand is relatively stable and slower delivery is allowed. Costs are another critical part of competitiveness, and economic literature suggests that they must be high in African firms because of technological backwardness and poor business environments

Costs of production are compared using firm data in Kenya and Bangladesh. Garment exporting firms in the both countries compete in the low-end market in the US and EU, so their costs are comparable. The first column of Table 5 shows that the average unit cost of Kenyan EPZ firms is higher by 37.7% than that of Bangladeshi firms.¹¹ This result is consistent with the change in trade after 2005; US buyers switched their supply source from Africa to Asia due to lower costs. Then, question is whether the cost disadvantage of Kenyan firms resulted from lower productivity, as predicted by literatures, or higher factor prices. Among factor prices, capital and labour prices are likely to differ in two countries because difference in unit cost becomes much larger when material costs are excluded from production costs (note the second and third columns in Table 5).

Table 5 Cost Statistics and Technological Efficiency

	Unit Cost		Labour Costs per Worker	Technical Efficiency
	All Production Costs*	Without Material Cost**		
Kenyan EPZ Firms (N=5)	0.820 (0.321)	0.620 (0.606)	1064.7 (432.6)	0.486 (0.278)
Bangladeshi Firms (N=165)	0.595 (0.180)	0.266 (0.220)	469.0 (225.6)	0.516 (0.189)

* Input costs per gross output.

** Capital and labour input costs per value added

Note: Average of the group. Standard deviations are in parentheses.

Source: Fukunishi [2007]

The productivity of Kenyan and Bangladeshi firms is measured as technical efficiency, which

¹¹ Because of the variety of products, unit cost is measured as production costs per gross output.

indicates deviation of actual output from the technically maximum output, given factor inputs¹² (Fukunishi [2007]). Though measured technical efficiency differs by estimation model, the average of Bangladeshi firms is higher than that of Kenyan firms in all estimations¹³. The difference of technical efficiency ranges from 6% to 16 %, though the standard model shows the smallest difference, and it is not statistically significant (Table 5). Estimates indicate that on average, Kenyan EPZ firms are likely to be only slightly less productive than internationally competitive firms in Bangladesh. Given that all Kenyan exporting firms are multinational firms with international standard technology and knowledge, the technological backwardness is not significant in this case.

To understand what drives cost differences between Kenyan and Bangladeshi firms, unit cost is decomposed into technical efficiency and factor prices using a cost function estimate. Deriving the input demand function from the production function, technical inefficiency can be incorporated in cost function:

$$C = rK(r, w, Y, TE, AE) + wL(r, w, Y, TE, AE) = C(r, w, Y, TE, AE),$$

where Y is output, K is capital, L is labour, r is rental price, w is wage, TE is technical efficiency, and AE is allocative efficiency indicating a degree of misallocation of capital and labour, given factor prices.¹⁴ The unit cost function is obtained by dividing cost by output. By taking the ratio of the unit costs of two firms (firm i and j), the gap of unit cost between firm i and j is decomposed as

$$\frac{D_i}{D_j} = \left(\frac{r_i}{r_j} \right)^{\frac{\beta_1}{\beta}} \left(\frac{w_i}{w_j} \right)^{\frac{\beta_2}{\beta}} \left(\frac{Y_i}{Y_j} \right)^{\frac{1-\beta}{\beta}} \left(\frac{TE_i}{TE_j} \right)^{\frac{-1}{\beta}} \frac{AE_i}{AE_j}, \quad (1)$$

under the production function specified as

¹² Production function with stochastic technical efficiency in the following form is estimated.

$$Y_i = \alpha K_i^{\beta_1} L_i^{\beta_2} * TE_i * error_i,$$

where Y : output, K : capital, L : labour, TE : technical efficiency, and $error$: stochastic disturbances. Technical efficiency ranges from 0 to 1, a higher score indicates more efficiency, and is assumed to be a stochastic variable.

¹³ A small number of the Kenyan sample present a potential problem in the estimation, though the production function estimates are based on larger samples (including Kenyan local firms), and the estimation results are stable over a variety of functional specifications. For methodology and detailed results of the estimation, refer to Fukunishi [2007].

¹⁴ Though allocative efficiency does not indicate productivity in the standard definition, it represents a part of managerial effort to reduce costs. Thus, it can be regarded as a reflection of knowledge that an individual firm has.

$$Y_i = \alpha K_i^{\beta_1} L_i^{\beta_2} * TE_i,$$

where $D = C/Y$ is unit cost, $\beta = \beta_1 + \beta_2$, and \overline{AE}_i is extra cost borne by misallocation of inputs.¹⁵

The first two terms in the right hand side represent the contribution of a gap in factor prices to the unit cost ratio between firm i and firm j , and the third term represents the contribution of scale economy. The fourth term is the contribution of technical efficiency followed by allocative efficiency. Hypothetical average Kenyan firms, with average input, output, factor prices, and efficiency are compared with hypothetical average Bangladeshi firms.

Unit cost is defined as capital and labour cost per value added, and the Kenyan mean unit cost is 2.19 times larger than that of Bangladeshi firms (Table 6). This result suggests that technical “inefficiency” has pushed up the unit cost of Kenyan firms by 6% relative to the Bangladeshi mean, and even if allocative inefficiency is added, these inefficiencies inflated unit costs by 13.3%.¹⁶ On the other hand, wages make the largest contribution, increasing unit costs by 97.6%, and rental prices and scale economy have slightly reduced costs (because of the large size of Kenyan EPZ firms). The estimate shows that most of the gap in unit costs is explained by labour costs and to much lesser extent by productivity. This is in contrast to predictions made in economic literature.

Table 6 Decomposition of the Difference of Unit Cost

		Kenyan mean / Bangladeshi mean
Unit Cost (a)	D_i/D_j	2.190
Rental Price (b)	$(r_i/r_j)^{\beta_1/\beta}$	0.960
Wages (c)	$(w_i/w_j)^{\beta_2/\beta}$	1.976
Scale Economy (d)	$(Y_i/Y_j)^{1/\beta-1}$	0.982
Technical Inefficiency (e)	$(TE_i/TE_j)^{-1/\beta}$	1.060
Allocative Inefficiency (f)	AE_i/AE_j	1.069

Note: As indicated by equation (1), $a = b*c*d*e*f$.

Source: Fukunishi [2007]

¹⁵ \overline{AE}_i is a function of AE and parameters (β). β_1 and β_2 are estimated using production function. A full extension of the unit cost function is shown in Fukunishi [2007]. For details of the methodology, refer to the paper.

¹⁶ From table 6, contribution of technical efficiency (1.060) multiplied by that of allocative efficiency (1.069) gives 1.133.

4.2 Adverse Effect of the Business Environment

What about adverse effect of business environment? Does not the poor business environment in Kenya hurt productivity and inflate costs? In fact, both Kenya and Bangladesh have been recognized as a country with the worst governance. The governance index created by the World Bank Institute rated them in the bottom quarter of the world with respect to “rule of law” and “control of corruption” (World Bank Institute [2007]). A comparison of this index (Table 7) shows that levels of the governance index are similar between the two countries and far below the world average (except for “regulatory quality” in which Kenya received a better evaluation).

The national level governance evaluation is consistent with the firm level information for business environment. It reveals that delays in material delivery occurred more frequently in Kenyan EPZ firms than in Bangladeshi firms, while power failures happen more frequently in Bangladesh (Table 8). Though delivery delays are partly the result of long transportation distances, managers of Kenyan firms also complained of slow and corrupt custom clearance. The largest Export Processing Zone in Kenya is equipped with an independent power supply, and this may have improved the electric supply. It was also reported that sales collection took longer for Kenyan firms, but 27 days on average is not very long considering due dates. Managers indicated that foreign buyers complied with contracts. This evidence suggests that there is not a large difference in business environment of Kenya and Bangladesh, and poor business environment do not seriously affect operation.¹⁷ Simple technology of the industry is likely to minimize the adverse effect of the poor business environment on productivity.

Table 7 Governance Index (Average of 2002-2004)

	Bangladesh	Kenya
Government Effectiveness	-0.71	-0.72
Regulatory Quality	-0.97	-0.18
Rule of Law	-0.86	-1.03
Control of Corruption	-1.17	-0.89

Note: Indices range from -2.5 to 2.5 with world mean at zero.

Source: World Bank Institute [2007]

¹⁷ Rodrik [2005] argued that improvement of business environment is not always the first step to stimulate entrepreneurial activities based on the experiences in South Korea, China and Latin America.

Table 8 Business Environment

	Occurrence of Delivery Delay	Days of Blackout	Days to Collect Sales
Kenyan EPZ Firms	3.35* (3.77)	12.16 (17.27)	26.58 (28.48)
Bangladeshi Firms	1.04 (2.98)	18.68 (33.80)	20.07 (15.27)

* Statistically different from the Bangladeshi average at the 5% level.

Note: Delivery delay and blackouts in the last three months were surveyed. Standard deviations are in parentheses.

Source: Firm Survey in 2003

4.3 Wages and Labour Market

The average wage for Kenyan firms is higher by 2.3 times than that of Bangladeshi firms (Table 5), but wage levels of exporting firms are very close to the minimum wage. Thus, the minimum wage is a barrier for exporting firms to lower wages, but given wages offered in the informal sector, elimination of the minimum wage is unlikely to produce wages at the same level of Bangladesh.¹⁸ The wage gap corresponds with the national poverty line; the poverty line in Nairobi is higher by 2.6 times than that in Dhaka (Fukunishi et al [2006]). Further reduction of wages will aggravate the health condition of workers, and firms will not have incentive to do so.

High wages can result from factor endowment pattern. Wood and Mayor [2001] argue that the factor endowment pattern in Africa is skilled-labour scarce and land abundant, and it gives a comparative disadvantage to manufacturing products. In absence of wage equalization for some reasons, a country with scarce skilled labour may have higher wages than one with abundant labour. Then, can factor endowment explain this situation? Actually, labour is scarce relative to land in Kenya when compared with very populous Bangladesh. Then, the prices of agricultural products and land in Kenya would not be higher than those in a country with scarce land. The poverty line, based on the commodity basket in which food and rent have a large share, must therefore not be higher than Asian countries. Comparative advantage based on factor endowment pattern is not consistent with relative price level in Kenya.

¹⁸ The average wage of manufacturing micro and small enterprises (less than 10 employees), which mainly comprised of informal sector is 3771 KSh in 1999 (Central Bureau of Statistics et al. [1999]).

Relatively high wages are not a unique feature of the Kenyan labour market. In other garment exporting countries, such as Lesotho, Swaziland, Mauritius, and South Africa, wages are not lower than those in Kenya, and only the Malagasy labour market offers low wages.¹⁹ Among these countries, Lesotho, Swaziland, and South Africa are struggling in the export market, while Mauritius and Madagascar recovered growth. Mauritius and Madagascar differ from other exporting countries in market orientation. A substantial share in exports is directed to the European market, while other African countries rely mostly on the US market. The European market is characterized as having a relatively large demand for quality and variation, and consequently orders tend to be small with longer lead time (Gereffi and Memedovic [2003]). This is more suitable for African industries with high wages, smaller clusters, and logistical disadvantages. Besides, efforts have been made in the Mauritian industry to improve productivity during the period of steady wage increases (Subramanian and Roy [2003]), which is partly a result of upgrading the market from low-end to middle range. Currently, Mauritius remains competitive with middle-range garments in the European market with an average wage of 279 US dollars.

For poverty reduction, an alternative way to strengthen competitiveness is to improve productivity and reduce other input costs. The Mauritian experience is a good model for African countries to follow; improving productivity, upgrading from a bottom range market to middle range, and developing domestic textile supply.

5. Spillover from FDI to Local Firms

5.1 Linkage with Local and Multinational Firms

In many garment-exporting countries, local firms developed technical capacity through interaction with multinational firms, and gradually replaced them. The most impressive spillover was seen in Bangladesh where about 700 local exporters were operating only five years after the first garment

¹⁹ The monthly wage for operators in Lesotho is 100 US dollars, 80 US dollars in Swaziland, 130-180 US dollars in urban areas of South Africa (Gibbon [2003]), 50-55 US dollars in Madagascar (author's interviews with exporting firms). The average monthly labour cost per worker (including all types of workers) in Mauritius was 279 US dollars in 2003 (Central Statistics Office [2005]).

exports supported by a Korean firm (Rhee and Belot [1989]). Following the emergence of FDI, local entrepreneurs in Mauritius had invested in the garment industry and it is estimated that they contributed to more than 50% of the total investment (Bowman [1991]). In Sri Lanka, garment export was triggered by FDI that mainly came from East Asia in late 1970's, but local firms also ventured into export and recorded just as good performance as foreign firms (Athukorala and Rajapatirana [2000]). More recently, local garment firms in Vietnam have developed through joint ventures and technical cooperation with Korean and Hong Kong firms (Ngoc Ca and Dieu Anh [1998]).

Multinational firms, particularly in the garment industry, are sometimes described as “foot-loose” (Gibbon [2003]) because small initial sunk costs allow them to change location in a short period. Therefore, development of local firms has helped to sustain long-term growth of exports in Asian countries. In addition, the spillover of technology and knowledge to local firms is regarded as technology transfer, which is seen crucial for the economic growth of developing countries in the theoretical and empirical literatures.²⁰ FDI spillover is considered to be an important path for technology transfer through labour turnover and vertical linkage of firms (UNCTAD [2002], Lall and Urata [2003]). In fact, several studies suggest that lack of manufacturing FDI is one of the reasons for technological backwardness in Africa (Lall and Pietrobelli [2004], Pack [1993], Biggs et al [1995]).

According to the author's survey, spillover was very limited in Kenya and Madagascar. In Kenya, among 120-150 local firms in major cities, 19 were found to be working with EPZ firms as subcontractors²¹. In Antananarivo, where many multinationals are located, there was no cluster of local garment firms, and several small firms subcontracting with multinational firms were scattered

²⁰ Endogenous growth models suggested that technology transfer is necessary for developing countries to catch up, though not guarantee (Grossman and Helpman [1991], Barro and Sala-i-Martin [1997], and Parent and Prescott [2004] among others). Romer [1992] described the Mauritian experience as a typical case in which technology transfer led to economic growth.

²¹ Due to the unavailability of a complete firm list, the number of local firms was estimated from the firm survey by contacting all firms in the several incomplete firm lists (including one used in World Bank RPED survey). Firms with less than ten employees, most from the informal sector, were not included. For details of the survey methodology, see Fukunishi et al [2006]. Local exporters were identified through the survey and author's interviews with firms and industrial associations.

around the city. On the other hand, the volume of FDI and the growth of garment exports in these countries was no less than that of other low income countries. Employment by EPZ firms in Kenya is as large as that of Mauritius and larger than that of Sri Lanka in the middle of 1980's, that is, about 10 years after the start of exports in the both countries. The annual growth rate of Kenyan exports between 2000 and 2004 was 58.5%, which is much faster than the growth rate of Mauritius from 1985 to 1990 (30.0%) when the fastest growth was recorded. FDI to Madagascar is larger and has a longer history than that in Kenya. Despite the substantial accumulation of FDI, participation of local firms in export markets is very small.

5.2 Learning Capacity and Incentives

The process of spillover is described as the learning of new technology and knowledge for export markets. Production of export products differs from domestic products in quality, volume of order, lead-time, and management of logistics (Lall and Winaraja [1994]), so firms attempting to enter into the export market must learn. Literature on technology transfer, however, argues that absorptive capacity is necessary for firms to learn new technology (for example, Nelson and Phelps [1982] and Abramovits [1986]), and thus, learning by local firms from FDI depends on their absorptive capacity. Further, incentives for learning affect a firm's learning decision, as learning is not cost less. It requires training and consultancy costs, opportunity costs of giving up current production, and foregone profits during trial and errors of new technology in addition to physical investment.²² It also entails risk because technical and market information of new technology may not be completely known before learning. Based on interviews with local and EPZ firms, local capacity and learning incentives were analyzed for the Kenyan case²³ (Fukunishi [forthcoming]).

Profiles of local exporters and non-exporters revealed that the former did not necessarily have better learning capacity than the latter. Majority of local exporters were newly established by Kenyan

²² Social learning literature modeling technology transfer (or imitation) assumes learning costs and risks (for example, Chamley [2004]).

²³ Thirty-three firms (10 local exporting firms, 18 local non-exporting firms and 5 EPZ firms) were visited in 2005 and 2006. For details of the interviews, see Fukunishi [forthcoming].

entrepreneur with expatriates spun-off from EPZ firms.²⁴ Most Kenyan entrepreneurs had no experience in the garment industry and relied on the technical and market knowledge of expatriates. On the other hand, existing local firms have a good capacity to manage production and are as effective as Bangladeshi firms on average.²⁵ EPZ firms visited local firms and offered subcontracts to some of them,²⁶ but only four existing firms ventured into the export market. This evidence suggests that knowledge belongs to human capital, and local firms can at least start in the export business by recruiting skilled workers. This is consistent with cases in Asia where labour turnover has played important role (Rhee and Belot [1989]). No support for lack of learning capacity was found.

Though exports have been rapidly growing, returns from export businesses were quite uncertain before 2005 because of the termination of MFA. Among 18 non-exporting firms interviewed, six indicated that they did not start their export business because of market risks (Table 9). However, interviews also revealed that they only have a general perception of the volatility of demand and prices in export markets rather than specific concerns regarding market access. In fact, with one exception, all non-exporting firms did not understand the regulation of market access.

Despite long stagnation of the domestic market,²⁷ export market was not attractive for local firms. Table 9 indicates that six firms regard the export market as not profitable, and three firms think that current business is more profitable. Altogether, half (nine) of the interviewed firms thought that the export market was not attractive. This negative evaluation relates primarily to output price with eight out of nine firms responding that prices are too low to make sufficient profits (the remaining firm did not give a clear answer). Wages of local firms are even higher than EPZ firms on average (Table 3), and in the presence of an active union, however, cutting wages is not a feasible option. Given the current wage level, managers of local firms must be aware that it would be very difficult to make a

²⁴ Among 19 local exporters, 15 firms were newly established and four were existing firms having switched from a domestic market.

²⁵ The average technical efficiency of Kenyan local firms is 0.514; this is comparable with values in Table 5.

²⁶ Among 18 non-exporting local firms interviewed, 12 talked with EPZ about subcontracting (Table 9 indicates that 6 firms had no offer from EPZ firms).

²⁷ Sales for the domestic market have been shrinking since trade liberalization because of the influx of imports and secondhand items (McCormick et al [1999]).

profit with the output price offered by EPZ firms. In contrast, local exporters offer lower wages than non-exporting firms by 30% on average, and this gives them a more favorable expectation for return. Newly started local exporters did not need wage cuts.

To offset high wages, higher productivity is needed. Given their average wage, local firms must realize higher productivity than EPZ firms. While EPZ firms have made efforts to raise productivity, which include developing long-term training schemes and using sophisticated machines, productivity is not yet as good as that of Bangladesh firms as we have seen. For local firms with less knowledge, human capital, and experience, it is not easy, and a long period of trial and error is necessary. This inflates learning costs as well as the risk of learning.

Table 9 Reasons Not to Take Subcontracts from EPZ Firms (Multiple Answers)

	Attempted Subcontract* (N=6)	Not Attempted** (N=12)	Total (N=18)
No offer from EPZ firms	2	4	6
Current business is profitable	0	3	3
Export market is not profitable	4	2	6
Export market is risky	4	2	6
Substantial physical investment is necessary	5	5	10
Substantial training of workers is necessary	1	1	2
Other			
Products are different	0	3	3

* Firms which attempted subcontracts of EPZ (but not realized). ** Firms which did not attempt subcontracts.

Source: Fukunishi [forthcoming]

Physical investment is raised by 10 local firms as a reason not to start an export business (Table 9). In general, at least 150 sewing machines are necessary to take subcontracts of EPZ firms, while local firms possess 50 machines on average. Newly established exporters spent 14.9 million Ksh (about 190,000 US dollars) on average (including factory buildings if purchased), though existing firms need much less investment. Among 18 non-exporting local firms interviewed, only three small firms were not access to credit, and rest firms replied that they are unwilling to borrow for investment because of the high interest rate (15-20 % annual). However, real interest rates in Kenya do not

significantly differ from Bangladesh and India in the country-level statistics,²⁸ the inactive response of Kenyan firms can not be attributed to credit constraints. A possible interpretation for this is that the expected return on investment in the export business is not higher than the interest rate.

In the case of Kenya, low expectations for profitability and general risk for the export market discouraged investment in export business, while learning capacity and credit constraint had an adverse effect only on small firms. This result, however, may not be extended to the case of Madagascar, because wages in Malagasy firms are lower than those in Kenya. The background of limited FDI spillover in African garment industry has not yet been explored.

6. Conclusion

Foreign investment in the garment industry has created formal employment, particularly for female and less educated people in urban areas. Though wages are generally lower, and working hours tend to be longer than in other private sector jobs, new employment opportunity provides income well beyond the poverty line with less gender bias in wages and promotion. If working conditions are improved, clothing exports will be able to contribute to poverty reduction in urban areas.

However, middle and long term impact on poverty is less clear. The garment industry in Africa is less competitive in terms of cost and logistics and spillover effect to local firms is quite limited. Consequently, growth of the industry is questioned in some countries, and diversification of industrial structure through technological development of local firms can not be assumed currently.

Investigation of the case of Kenya shows that in contrast to existing studies, cost disadvantages result primarily from high labour costs, while the productivity gap is small. Technology and knowledge is brought by multinational firms, and the adverse effect of the business environment on productivity is minimized due to simple technology of the garment sector. Limited spillover is not attributed to poor absorptive capacity and credit constraints in the case of Kenya, which are often

²⁸ Based on the real interest rate by World Bank [2007].

raised by the economic literature. Again, high labour costs and uncertainty in the export market have discouraged local firms from investing in export opportunities. Without further investigation, this evidence cannot be extended to other African countries such as Madagascar where wages are less than other African exporting countries. However, this study does indicate new aspect of stagnation in the African manufacturing sector.

Though minimum wages have kept labour costs high, elimination of such is unlikely to solve the problem in view of efficiency wage as well as poverty reduction. The only solution is to improve productivity. As the case of Mauritius shows, improvement of productivity can sustain competitiveness with high labour costs. Upgrading the market as well as increasing efficiency is needed, but multinational firms tend to switch locations rather than make efforts to improve, and local firms without market linkage and technical knowledge face high learning costs. Governments can support solutions to these problems. They can give multinational firms incentives to stay through providing better business environment and economic and political stability. They can also help learning by local firms by linking them with multinationals, encouraging technology transfer, and providing market information to reduce uncertainty.

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