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Industrial Upgrading in Sub-Saharan Africa

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Industrial upgrading in sub-Sahara Africa: the competitive impact of China on supplier linkage development potentials of resident Asian entrepreneurs

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Abstract: This paper argues that the emergent profile of China as a top global exporter of apparel input material is undermining the spill-over potentials of Asian direct investment in apparel production abroad. The experience of sub-Saharan Africa is presented as an illustration of this claim. Insights from the GVC literature are used to show that Asian investors in Lesotho's apparel manufacturing business rely principally on China for their input supplies. As a result of this, the incidence of Asian entrepreneurship in the country's apparel sector is revealed to be associated with significant negative impact on supplier linkage development. Measures to promote local supplier development as well as improve the quality of service deliveries in key infrastructural areas are put forward as interventions needed to encourage firms to look inward for their supply needs.

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1 Introduction

In the wake of the December 2004 expiration of the World Trade Organisation (WTO) agreement on textile and clothing (ATC) the African apparel sub-sector came under the spotlight as a victim of the removal of quota restrictions[1]. Her erstwhile flourishing trade performance suffered a major setback as rising export values suddenly took a downturn. Obviously anticipating stiffer competition from supposedly more efficient producers in countries like China and India many resident Asian entrepreneurs divested and left the continent. In the Taiwanese dominated clothing business of the small landlocked country of Lesotho for instance, three out of about 38 existing apparel manufacturing companies closed down their operations in 2004 alone with another following suit in January 2005 (LNDC, 2005). Other estimates put the number of factory closures that were reported in January 2005 at six (Bennet, 2006). Those that avoided outright closures had their capacities reduced to cope with the anticipated reality of increased competition. While sectoral employment in the country had risen in tandem with growing economic activities that followed the declaration of African Growth and Opportunity Act (AGOA) trade benefits in 2000, a significant percentage of gains recorded was lost during this crisis period[2]. For other key apparel producers with significant Asian connections like Kenya, South Africa, Swaziland, Malawi, Namibia, and so forth, similar stories of factory closures and consequent job losses also made the headlines.

The ease with which these entrepreneurs of Asian descents divested and deserted the continent raises an important issue of local linkage related industrial upgrading. It further raises a broader question on the role of Asian drivers as engines of growth for developing countries in general and sub-Sahara African (SSA) countries in particular.

This paper is an attempt to explain how China's global competitiveness as a major exporter of apparel intermediate input is currently diminishing prospects for industrial upgrading in Africa's textile and clothing industry. It is argued that the revealed enclave nature of Asian engagement in the sector can be explained by their extra-regional embeddedness within the Asian model of integrated apparel production and distribution network. This in turn creates a dependence on China for supplies of input materials and

consequently places the interest of local supplier development in direct competition with imports from China. Since many SSA countries currently present relatively uncompetitive supply environment, the outcome of this lopsided contest is the observed footloose behaviour of Asian entrepreneurs with serious consequences for their potentials to generate backward linkage related upgrading for their host economies.

To address this issue two interrelated objectives that have been identified for accomplishment include showing that: one, member firms of the Asian integrated apparel production and distribution network that externalised some of their chain activities to African locations depend on China for input supplies; two, consequent on this there has been a negative impact of Asian entrepreneurship on supplier linkage development in African manufacturing industry.

Earlier attempts to explore the implications of the rise of China for economic development in other countries provide a framework that distinguishes between complimentary and competitive dimensions (Jenkins and Edwards, 2006; Nayyar, 2008). The competitive impact hypothesis argues that China is a threat to economic progress of others because her growing attractiveness places her in competition for economic attention with other developing countries in two main areas. The first area focuses on trade related issues and highlights both the direct and indirect competitive effect. A direct impact is revealed when imports from China displace local producers or stifle their development. But the impact is indirect when other developing countries are forced to lose their share of export market in third countries due to competition from China.

Studies examining the trade related manifestations of competitive effect of China have so far restricted their focus to the latter (indirect effect). Yang (2003) for instance examined the effect of China's WTO accession on other developing countries' exports to third market and concluded that most of the negative impact was likely to be felt in clothing and textiles as well as electronic industries. But Blazquez-Lidoy et al. (2004) find that in general there is no relevant trade competition between China and Latin America. One study that focuses on China's Asian neighbours also shows that her competitive threat in third market to countries in the region lies in low technology products (Lall and Albaladejo, 2004). In their own contributions Jenkins and Edwards (2006), utilise African data to shed light on how the export profiles of China and India compete with those of African countries. They find that at continental level, there is no real competitive effect of China's exports to the world on Africa's exports but at country level there are some countries like Lesotho and Mozambique whose exports to third market are being threatened by China.

The second area of research on the competitive impact of China is firmly rooted in foreign direct investment (FDI) rhetoric. Here as well the literature explicitly foregrounds both its direct and indirect manifestations. Impact is direct if FDI from China crowds out domestic investment and indirect if China's attractiveness diverts FDI resources potentially meant for other economies to her own. On this account also some findings are robust on the side of the argument that China is a threat to the attractiveness of other economies as FDI destinations. Using Latin America as a case study Garcia-Herrero and Santabarbara (2004) reveal that there is a significant negative impact of Chinese inward FDI on those of Mexico and Colombia. A similar study extends the focus to include the experience of some eight Asian economies and finds that an increase in FDI inflow in China is associated with a decline in the Latin American and Asian shares of FDI of all developing economies (Chantasasawat et al., 2004). But contrarily, Jenkins and Edwards

(2006) argue that the case for diversion of FDI from Africa to China is weak because by virtue of its resource specific nature much of the FDI to the former is location specific.

While these studies have provided some very useful insights, the literature they have developed can be criticised on a number of grounds no least of which is its silence on possible evidence of direct trade impact of China's competitive threat. Precisely with respect to potential displacement or stifling of the development of local producers by increased Chinese imports not much is known in this area. One exception to this is Jenkins and Edwards (2005) who find that increased African imports of Chinese goods have largely been at the expense of imports from other countries and that the crowding out of domestic producers is very unlikely. But as the authors themselves argue in a latter paper (Jenkins and Edwards, 2006) the aggregative nature of the data from which the conclusion is derived could mask some important dynamics that might be taking place at a more disaggregated level of analysis. Making their case further, they suggest that more analysis at the product level or for groups of products would be required to take the research further.

An attempt is made in this paper to contribute to the literature in the direction suggested above. By focusing on SSA apparel sector using disaggregated firm and country level data the relationship between China's position as a key world exporter of apparel intermediate material inputs and the development of African domestic suppliers is analysed. More fundamentally, the paper departs from earlier works in the sense that it is the stifling of local supplier development in general rather than displacement of any existing one in particular that is of interest. An implied assumption of FDI as a model of development is that its inward flow has potentials to trigger development in both upstream and downstream sides of operations. On the upstream side for instance, the FDI agents (usually MNC subsidiaries), can serve as agent of development either:

1 through patronage of local suppliers where one exists or

2 facilitating their emergence where none exists[3].

However, availability of cheap material imports can work against these potential spill-overs and in the worst case scenario even lead to displacement of existing ones while in the best case stifle development by making investment in the sub-sector unattractive. In either of these cases it is the interest of backward linkage related upgrading that suffers.

Specifically, the focus of the empirical analysis is on the experience of Lesotho with apparel development project. Besides the fact that this country specific firm level analysis provides an opportunity to carry out a detailed examination of the type suggested by Jenkings and Edwards, the choice of Lesotho offers additional attractiveness for two main reasons. The first is that she is arguably the most significant beneficiary of Asian direct investment in SSA apparel sector to date. The second also bothers on the fact that the small economy happens to be one of the biggest losers in the recent wave of Asian divestment from African apparel business following the expiration of ATC quota in December 2004. The data comes from the World Bank regional programme on enterprise development survey exercise that was completed for the country's private sector enterprises in 2004.

Findings from this firm level analysis confirm the argument with respect to the negative impact of China on the development of local suppliers of apparel input in Africa. The Asian investors in Lesotho textile and clothing business who are

predominantly from Taiwan have relied on imports of textile, fabric and related intermediate goods from China for their operations. The percentage of material input and supplies usage in 2002 that came from network sources in Asia where China constitutes the major supplier averaged around 93% of total. This confirms the first argument that China has continued to serve as the source of input for Asian entrepreneurs who outsourced part of their downstream operations to locations in Africa.

Secondly, results from estimated ordered probit equation also confirm the hypothesis that Asian ownership status associates negatively with supplier linkage development proxy. The incidence of Asian investors in Lesotho apparel manufacturing is associated with a 28% decrease in predicted probability of high linkage development potentials. Consistent with earlier argument, this is interpreted to mean that dependence on China as a source of input for Asian firms engaged in apparel production in Lesotho is currently working against the interest of domestic supply base development in particular and industrial upgrading in general.

The rest of the paper is organised as follows. Section 2 utilises insights from the Global Value Chains (GVC) literature to motivate the main hypothesis linking China with enclave behaviours of resident Asian entrepreneurs and their potential consequences for supplier development. To have an intellectual framework for analysing the predicted consequences in Section 2, the literature on the determinants of supplier linkage development is presented in Section 3. Section 4 discusses the methodology used while analyses of results follow next in Section 5. In Section 6 a brief recap of the main points as well as concluding remarks of the paper are presented.

2   China and supplier linkage development potentials of Asian entrepreneurs

An important feature of extant literature on global commodity chain framework is the recognition that industrial upgrading is critical if participants to the globally integrated production and trade networks are to reap some significant benefits. This is what in the view of some authors defines the difference between a harmful and a beneficial pattern of insertion into the global economy (Kaplinsky and Morris, 2001).

Industrial upgrading in this context is defined as 'a process of improving the ability of a firm or an economy to move to more profitable and/or technologically sophisticated capital and skill-intensive economic niches' [Gereffi, (1999), p.51]. Among several of its manifestations especially from a national economy perspective is a progressive move towards a more integrated form of production that involves greater use of both forward and backward linkages. In the apparel commodity chains for instance, forward linkage inspired upgrading often requires some progression along the downstream end of the chain to internalise such post-production functions as distribution and marketing. If however, upgrading is backward linkage related this will mean moving from say the performance of a mere maquiladora type assembly function where the main activities are cut make and trim (CMT) to a more locally integrated production arrangement that adds textile and other input production functions into the system. The focus of this paper is on this latter manifestation of industrial upgrading.

Much of the promises and hopes of national development in poor economies that are inserted into a globally dispersed and functionally integrated production network of the type described above is hinged on an outcome of this type. For many countries in SSA

that have in the last few decades experimented with this model of development it is revealing that after several years evidence of meaningful success is hard to find. Indeed, with respect to apparel sector development project which is generally seen as the main platform for launching into industrialisation-led development, it is either that countries failed to attract sufficient location of network functions into their shores or those that succeeded often find it difficult to move up the ladder to the next stage. Few examples here will provide some illustrations. In the wake of the birth of AGOA preferential trade initiative, a number of beneficiaries mostly from Southern and Eastern coast of the continent were successful in attracting the performance of assembly type network functions into their economies. These investments which were primarily driven by the Asians saw a large chunk of Taiwanese assembly plants added to Lesotho's already growing base. Namibia benefited from the patronage of Malaysian investors to kick start her exports to the US market while Swaziland and Kenya also received some significant Asian direct investments.

However, an inventory of achievements in these economies years after the boom reveals that upgrading to the next higher level of apparel value chain has so far remained elusive. Most operations in African apparel export processing zones still involves simple trimming, sewing, stitching, and ironing of low-end basic clothing suggesting there has been little or no linkage (Rolfe and Woodward, 2005). The two cases of Lesotho and Kenya which had significant apparel assembly bases that date back to decade before AGOA and are expected to be more successful in upgrading within a short life span of the trade incentive boom are very instructive. In a recently completed study of the state of textile and clothing industry in Eastern and Southern Africa, Rolfe and Woodward find that the value of local component in Kenyan apparel exports is just 3% of its sales value (Rolfe and Woodward, 2005). Other observers have also noted that the only significant evidence of backward integration in Lesotho after nearly two decades of experimentation with the project has been the construction of a US$100 million denim plant in 2004 (Kaplinsky et al., 2007).

This revelation that little or no backward linkage is taking place in Africa apparel sector can only mean one thing: that apparel plants operating in the region are relying substantially on importation of input materials to the detriment of local supplier patronage and hence their development. But where do all these imports come from? To answer this question, a scanning of the globe for identification of the most likely source (s) would be necessary. Bearing in mind that manufacturers will naturally source from the most competitive global supplier and that this competitiveness can be determined by a country's ranking in the top exporters list, Table 1 below identifies the world top four exporters of textile, fabric, yarn and related apparel input materials.

Table 1   Top four global exporters of textile, fabric, yarn and related apparel input
(2001–2005) SITC Rev. 3

| Country	Total value of exports (US$)
China*	204,612,582,494
Italy	68,215,189,885
Germany	62,090,082,000
USA	56,391,480,354

Note:*Figure for China includes China Hong Kong SAR
        Source: UNCOMTRADE (2008)

China is a clear global leader in this area. For the period under consideration, Italy which ranks second has a trade value that is only about 28% of China's export. The combined total recorded for the two countries in third and fourth position (Germany and USA respectively) is not even up to half of China's.

This revelation alone may be grossly misleading as it does not really suggest that the global rating necessarily mirrors the happenings at the regional level. In other words, it is insufficient on the basis of this world ranking alone, to arrive at the conclusion that China and the other three countries occupy the same pride of place in the distribution of world exports to SSA countries. To get to terms with this issue the analysis is followed through to performance at regional Africa level. A five-year average value of these intermediate materials exports to Southern African Customs Union (SACU) countries by six of the world top exporters to the region was computed and the results are shown in Figure 1. Again, the towering profile of China is very visible from the figure. India which ranks second reports a figure that is less than 20% of China's trade. If the total value of exports by all the other five countries is further combined it will be seen that this is just around two-third of what China exported during the same period.

Figure 1   Five year average value of textile, fabric and materials exports to SACU by world major exporters (2000–2004) (US$)
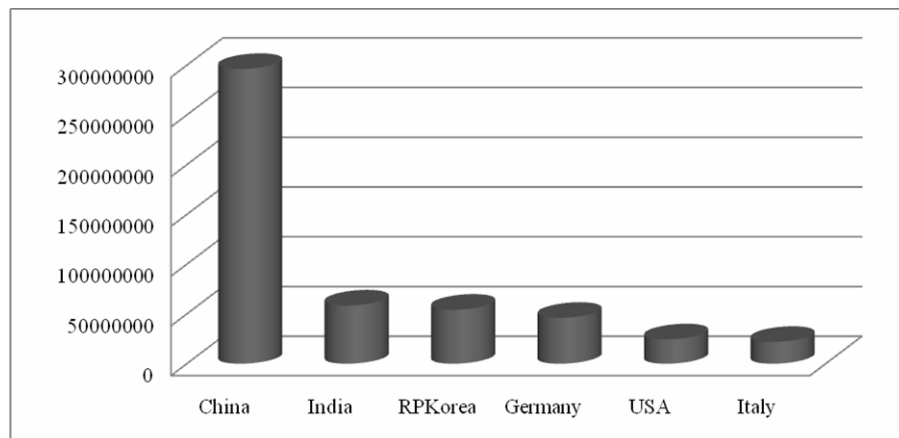
Notes: Countries included in SACU are South Africa, Lesotho, Namibia, Swaziland and
       Botswana. The averages are for five years except where observations for reporting
       countries are less in which case calculations are adjusted to take account of this.
       Source: Authors' calculation based on data from UNCOMTRADE (2008)

While in general the domineering influence of China as the most significant exporter of apparel intermediate input to SACU countries can be explained by the fact of her relative competitiveness among the world's top exporters, the paper argues that this is not the whole story. It is also a reflection of the Asian connection in the global apparel production network that links these African economies with the rest of the world. It is a well known fact that an active regionally integrated apparel production and distribution network flourishes in Asia. A major feature of this network is the strategic position of China as location for carrying out the production end of the value chain activities. Thus, when the East Asian NIEs began the internationalisation process of the late 1980s and

early 1990s China was a key destination for relocating assembly and related labour intensive activities that were being outsourced[4]. This is true at least with respect to both Hong Kong and Taiwanese manufacturers who literally shipped most of their production jobs to mainland China and essentially retained such skill intensive functions as product design, sample making, quality control, distribution and financing services in their homeland (Gereffi, 1999). The push factors in all of these were rising production costs at home and quota restrictions on exports abroad. China became an attractive location for the production and supplies of these items principally because of her relatively lower production costs attributes as well as her cultural ties to the NIEs (Gereffi, 1999).

But while China's attractiveness lies in these two factors, other destinations reveal their pull factors in the availability of preferential access to overseas market. Africa belongs to this latter category of beneficiaries as was the case around the 1980s and 1990s when a good number of garment firms from Hong Kong, Korea, Taiwan, India, and Sri Lanka established plants in SSA to take advantage of MFA quotas (Kaplinsky and Morris, 2008). This quota triggered and market seeking Asian investment in Africa is also evidenced in its recent wave that followed the expectation and subsequent declaration of AGOA Preferential Trade Act by the USA in 2000. Since the articulation of these African points into the Asian network derives more from preferential access to markets advantages and less from any significant possession of production cost advantages, the logic of cost minimisation will ensure that production activities that take place in the African shores are confined to their barest possible minimum. As long as an assembly-like function for instance, is sufficient to enable output access market under the preferential terms, retaining other elements of the production jobs like textile and fabric manufacturing operations in their lowest cost sites in Asia will be economically, an efficient thing to do[5]. In meeting the African offices' demand for the supplies of these input materials it should come as no surprise if this category of investors was observed to be focusing on Asia where China constitutes a major supplier.

In a nutshell, given China's global competitiveness and embeddedness within her regionally integrated production network in Asia, it should be expected that her contribution to the regional mix of input usage by Asian establishments in Africa would be significant. If this happens to be the case, it also follows that there will be little incentive (if not outright disincentive) on the part of resident Asian entrepreneurs to patronise let alone invest in the development of domestic input suppliers in their host economies. This can argument can be stated more formally in the form of a hypothetical statement predicting the pattern of relationship that develops between Asian entrepreneurship and supplier linkage development in Africa as follows:

Hypothesis   the presence of Asian entrepreneurship in SSA apparel manufacturing is negatively associated with supplier linkage development.

To have a proper framework for investigating this hypothesis, the next section briefly reviews the literature on the determinants of regional sourcing.

3   Determinants of regional sourcing

From contributions to this sphere of knowledge, it is possible to classify the main explanatory variables for a firm's decision to procure its input needs from domestic

suppliers around two broad categories of factors. These are demand related factors and regional supply potentials.

3.1   Demand related factors

Key elements that have been identified as possible influences on firms' demand for materials and other intermediate inputs from local suppliers are industry affiliation, size, age, network membership and ownership attributes of the plant.

Depending on their technological complexity and degree of product standardisation it has been suggested that different industries will exhibit different sourcing or linkage patterns within their local economies. A high-tech industry may find its hi-tech input needs difficult to be met by local suppliers and thus, weak on regional sourcing (local linkage). Conversely, low-tech industrial establishments may be strong on linkage since there is the likelihood that local suppliers will be able to produce their relatively simple intermediate input. The empirical reality that food processing industries requiring basic raw agricultural output as input are strong on local linkages while clothing firms with relatively sophisticated input requirements tend to be weak on linkage is probably a confirmation of this hypothesis (UNCTAD, 2001).

Furthermore, a remote possibility exists for firms in industry producing standardised goods to patronise local suppliers because by virtue of their standardised input requirements suppliers in foreign and distant locations will have little difficulty filling the orders. This is quite unlike the kinds of frequent specification and re-specification issues as well as contract negotiation and re-negotiation problems that will come to bear on production and supplies of customised inputs. In this case closeness to manufacturers or buyers that can make firms in customised product industries strong on local linkage becomes a key factor (Amin and Malberg, 1992).

Size is another factor with potentials to shape a focal firm's demand for local input. The argument here is premised on the logic that larger firms often make large orders of the scale and magnitude that local suppliers will literally be unable to meet. It is also possible that by virtue of their large sizes they are able to internalise their input procurement. All these will make one to associate large size with low levels of regional sourcing. Thus, from empirical point of view, the hypothesis that negative relationship exists between size and regional sourcing may sound plausible. Gorg and Ruane's work on multinational companies and linkages in the context of Irish electronics sector represents one fairly recent confirmation of this hypothesised relationship (Gorg and Ruane, 2001).

However, unlike size the view around the age factor as a determinant of local input sourcing by firms is that the older the establishment, the higher the propensity to source its intermediate needs locally. This is because the kind of familiarity that is needed to build confidence and trust on the ability of local suppliers often takes time to develop. Some studies find empirical support for this claim (McAleese and McDonald, 1978; Munday and Roberts, 2001).

Theory also suggests that firms with extensive geographical coverage in terms of belongingness to a conglomerate network or group of firms are less likely to be committed to regional souring. Their international network provides them with a relatively better knowledge of the global supply market. This confers on them a global market knowledge advantage in terms of having access to such important information like where the best suppliers are located, where to get the best prices and so forth as to

make them more in tune with global sourcing pattern than their counterparts (Dunning, 1993). As such, it will not be out of place to associate establishments of this type with poor record of regional sourcing.

Arguments linking ownership status with input procurement are premised on the distinction between foreign and indigenous ownership. There is always a fair chance that locally owned and managed plants will possess better knowledge of domestic business conditions than their foreign counterparts. They are for instance likely to be relatively well informed about domestic suppliers' capabilities which usually represent an issue to foreign firms. Again getting around the nitty-gritty of dealing with these local suppliers should pose not much of a problem for native firms as it is potentially likely for foreigners. Thus, an anticipation of a higher degree of local integration for domestic ownership attribute would seem reasonable. Evidence supporting this proposition can be found in UNCTAD (2000).

3.2 Regional supply potentials

Two important factors are crucial to the analysis of the potentials of a region to meet industrial demand for intermediate inputs. These are established industrial identity and supply capacity of the region (Crone and Watts, 2003).

Industrial identity of an economy is revealed in the type of industrial activity that is dominant in that economy. This identity qualifies the type of input market that is likely to be well developed in the area and by implication the type of supply potentials it will possess. A region where hi-tech industrial activities flourish like the USA and many European countries is likely to have well developed hi-tech intermediate input market and thus, command significant supply potentials in this industry. Firms in such industry are thus, likely to be strong on local supplier linkage. In the contrary, a region whose industrial profile is defined by low-tech activities as is typical of most of the African economies will find it difficult to support the presence of complex technology industries as its supply potentials will reflect low-tech rather than hi-tech input.

If industrial identity defines the sort of suppliers that are more likely to be present in a region, supply capacity relates their competitiveness to those of suppliers in other locations. In this era of global production networking, it is simply of no use to parade in one's territory a group of relatively inefficient suppliers. Such inefficiency diminishes the attractiveness of the region as a source of input as resident firms will find it more attractive to sourcing their input needs from the more efficient suppliers located elsewhere in the world.

4 Methodology

4.1 Data context

The Lesotho economy from which the data is derived is a backward small landlocked country which is geographically embedded within the Republic of South Africa. It is classified by the United Nations as a least developed country (LDC) and her per capital GDP for 2002 stood at $400 relative to $575 for SSA average. A 2004 estimate also puts her population figure at 1.8 million and almost 80% of this figure lives in rural areas. Unlike many of her continental African neighbours, it has no known natural resource

other than water, a large part of which has been sold to South Africa on a long term contract. Subsistence agriculture is the mainstay of the economy and although remittances from her Basotho emigrants to South Africa who used to work in the mines once accounted for a significant percentage of GDP, this has largely fallen due to decline in mining sector employment that was witnessed in the 1990s.

The secondary sector revolves around light manufacturing activities which is almost entirely driven by export oriented FDIs in apparel and footwear businesses. On the basis of sample evidence about 47% of these activities was concentrated in the apparel sector. Food and beverages accounted for 25% while only 11% was attributed to construction materials. The remaining 17% share was accounted for by paper, printing, publishing and other manufacturing (World Bank, 2007). It is also worth mentioning that these firms operate in an environment characterised by significant deficiencies in productivity enhancing factors: quality of power supplies, communication and transport services are relatively poor by international standard; water, which is a critical input for the garment firms is also in limited supply (World Bank, 2007).

The apparel sector in Lesotho formally began in the early 1980s when some South African firms trying to avoid sanctions placed on their home country by the USA and Europe relocated to Lesotho. Over the years, a combination of trade agreements with the West increased her (Lesotho) attractiveness as apparel FDI destination to investors trying to access markets in these Western and North American countries. Among this group were the South East Asians principally the Taiwanese who during the late 1980s moved-in en masse to exploit the benefits accruable to the country under the Lome Convention. Because market access was the motive, plants that were set up by these investors were generally confined to the footloose assembly type of operations. Therefore, it did come as surprise to many keen observers when in the 1990s some of these plants downsized while others outrightly closed down upon expiration of the derogation from cumulation provision of Lome Convention (Salm et al., 2002).

However, with the coming on stream of AGOA in 2000 Lesotho enjoyed another wave of these Asian inward FDIs into its apparel industry as not only did she qualify to export her clothing products to the US market duty and quota free she was also eligible for derogation from cumulation provision of the Act. According to a recent UNCTAD report, more than half of the 30 factories that accounted for substantial employments in garment and footwear industry in 2002 were opened subsequent to the AGOA Act. It is also instructive to note that about 80% of these factories belong to Taiwanese investors (UNCTAD, 2005). This observation that Taiwanese investors who were earlier identified alongside Hong Kong investors in Section 2 as two Key East Asian NIEs that share production arrangements with China drive business in the country's apparel sector provides a prima facie evidence that the Chinese connection in Lesotho's input procurement profile is likely to be very significant.

But despite the emergence and subsequent increase in number of garment firms, the upstream supply-side of the value chain did not respond to the challenge in any meaningful way. Indeed, much of the supply related activities in the country is centred on procurement of non-essential items like carton. The mainstream inputs like fabric, fabric markers, trims, thread and so forth are mainly imported. It was not until 2004 before the country commissioned its first denim fabric manufacturing plant: The Formosa Textile Mill. This means that the issue of supplier linkage development in the country is not really about displacement of any existing producer but that of facilitating the

development or emergence of one which could be compromised if firms had access to cheap imports.

It is against this background of a poor African economy whose industrial activities are largely concentrated in apparel that is also significantly driven by market-access seeking Asian (Taiwanese) investors that the data is now discussed.

4.2 Description of variables

As mentioned earlier, the data come from the World Bank administered investment climate assessment exercise that was conducted for about 75 industrial establishments and completed around the end of 2004. The sample of 75 firms included in the survey was carefully drawn to give a fair reflection of the industry's private sector[6]. The main variables used for the cross-sectional analysis are defined below while Table 2 gives their summary statistics.

4.2.1 Dependent variable (supplier linkage development)

Consistent with earlier conceptualisation this could take the form of either procurement of input from local suppliers where one exists or facilitating the emergence of one where none exists. While ascertaining the level of local procurement is a straight forward issue, ascertaining the level of efforts deployed into facilitating emergence of local suppliers is a little bit tricky. On one hand interest in development of local supply base could take the form of outright investment in input producing plants by the firm[7]. On the other, it could take the form of encouraging suppliers elsewhere to open up plants in Lesotho. In both of these cases direct information is not available from the data. Hence, it is argued that since a firm would be prepared to invest in raw material supplying plants or persuade others to open subsidiaries only if it judges the environment to be right for long-term commitment, interest in the development of local supply base can be crudely approximated by a firm's readiness to commit to long-term operations in the country. Assuming the magnitude of this interest can be gauged by the share of profit re-invested in the establishment, the dependent variable is defined as the percentage of material input usage in 2002 that came from domestic sources or the share of net profit re-invested in operation in 2002. Responses vary between 0 and 100%. In the latter part of this section an explanation of how the variable has been captured is provided.

4.2.2 Asian firms

This is the explanatory variable of interest and it expresses the simultaneous incidence of linking a firm with the garment sector and Asian ownership. For observations where these two attributes coincide, a value of 1 is given, otherwise 0. In line with the argument in Section 2, this variable should weaken the prospects for supplier linkage development. A negative sign for its coefficient is thus, expected.

4.2.3 Control variables

The choice of control variables included in the model was determined by data availability. On the demand related factors four variables: size; age; sector and network

membership have been included, while a single variable proxies for regional supply potentials.

4.2.3.1   Size

The discrete orientation of its operationalisation generated four dummy variables that distinguish between micro (*msz*), small (*ssz*), large (*lsz*) and very large (*xlsz*) sizes. Micro size firms are establishments having between one to nine employees. Small size is defined as a workforce of ten to 99 employees while large firms have between 100 to 499 workers on their payroll. However, if a firm had up to 500 staff or more in its employment, such establishment is classified to be of very large size. In each of the four cases a positive outcome is associated with a value of 1 and negative outcome with 0. Since large firms are expected to be weak on linkage potentials, it follows that a negative association of the proxies for largeness with the dependent variable should be a natural outcome.

4.2.3.2   Age

This variable is captured by simply deducting from the year 2002, the year the establishment started its operation in Lesotho. But unlike the large size variable, it is expected that its coefficient would be positively signed.

4.2.3.3   Sector

A key feature of Lesotho's economy that was recognised earlier is that not much heterogeneity exists in terms of sectoral distribution of establishments. This is partly a reflection of its simplicity as a poor underdeveloped economy that is still on the learning curve of industrialisation. Leverage here is therefore, constrained by this factor and what analysis reveals is a four-sector category of similar but not necessarily the same light manufacturing business activities. These are food and beverages (*fb*), garment and textiles (*gt*), footwear and leather (*fl*) and other manufacturing (*om*) sectors. While both *fb* and *gt* are anticipated to be positively and negatively associated with linkage development respectively, the directions of other sectoral influences are unclear.

4.2.3.4   Network membership

To get this information, authors abstracted from participants' responses to the question which required them to state whether or not their firms had any holding or operations in other countries. An affirmative response is considered sufficient to qualify the firm in question for group or network membership and accordingly assigned the value of 1, while a negative response is marked with a value of 0 suggesting that the firm does not have the required international connection. The anticipation here is that the coefficient of this explanatory variable will have a negative sign.

4.2.3.5   Supply potentials

Available data does not provide the authors with an easy way of determining what proxy to use for measuring supply potentials of Lesotho economy. Although her industrial identity is revealed by a constellation of relatively low skill and low-tech light

manufacturing activities, the absence of a comparative skill intensive hi-tech sector makes a possible suggestion that her supply potentials would be good in the former area and that all incumbent firms would be strong on linkage empirically preposterous. A possible alternative is to try to figure out local suppliers' relative competitiveness and see how this affects sourcing behaviour of plant managers. Again this kind of information is not readily available in the data.

To get around this problem, the research abstracted from Hoare's (1985) useful insight on local supplier capacity. His argument is that decision makers' perception of domestic suppliers' availability and competitiveness is as important as the actual fact itself in determining the prospects for local sourcing. Hence, Lesotho's supply potential is modelled as a function of plant managers' judgements on the competitiveness and availability of domestic suppliers. One of the survey questions had particularly sought to know from participants the main factors that were preventing them from patronising domestic suppliers. Three of these factors which allowed the researchers to form a fairly good judgement of managers' impressions of the availability and competitiveness of these suppliers are:

1 there are no local suppliers

2 local suppliers do not have sufficient capacity to meet orders

3 quality of local supplies is inadequate.

If any of these factors featured in the response provided by a plant manager, such feedback is simply interpreted as a negative impression that suggests poor regional supply potentials. Observations falling into this category of responses are given the value of 1 while others are assigned 0 values. Inadequate supply capacity as revealed in decision makers' impressions should naturally be associated with low level of local patronage and a negative sign for its coefficient represents a likely outcome.

Table 2   Summary statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Dep. var (sl)	70	1.21	1.27	0	3
micro size (msz)	75	0.12	0.33	0	1
small size (ssz)	75	0.31	0.46	0	1
large size (lsz)	75	0.20	0.40	0	1
xlarge size (xlsz)	75	0.17	0.38	0	1
ntw (ntw)	74	0.30	0.46	0	1
Asian firms *(asgt)*	75	0.23	0.42	0	1
fb sect	75	0.25	0.44	0	1
gt sect	75	0.39	0.49	0	1
fl sect	75	0.08	0.27	0	1
other sect (om)	75	0.20	0.40	0	1
p. supply pot (psp)	75	0.43	0.50	0	1
age *(age)*	75	12.25	15.05	−1	91

4.3   Estimation

The model that was estimated to determine the impact of Asian entrepreneurs on supplier linkage development is expressed as:

$$sl = ssz, lsz, xlsz, fb, gt, fl, asgt, age, psp, ntw$$

where *sl* is supplier linkage dependent variable. *ssz*, *lsz*, *xlsz*, are proxies for size that denote small size, large size and very large size respectively. Sectoral variables are identified by *fb* (food and beverages sector), *gt* (garment and textile sector), and *fl* (footwear and leather sector). *asgt* defines the incidence of an apparel plant belonging to Asian investors. Finally, *age*, *psp* and *ntw* express age of the firm, poor supply potential and network membership respectively. Both *msz* (micro size) and *om* (other manufacturing) were dropped from estimation to avoid collinearity.

The ordered probit regression technique has been adopted and two versions of the explained variable have been specified. The first (Model 1) defines supplier linkage development as percentage of material consumption in 2002 that was sourced in Lesotho only or share of profit in 2002 that was ploughed back into operation. The second (Model 2) extends the definition of input procurement to include procurement made from anywhere in Africa. Responses were calibrated into four discrete ordered choice categories that take on a range of values between 0 (no linkage) and 3 (high linkage) as follows[8]:

$$sl = \begin{cases} 0 = 0\% \text{ (no linkage)} \\ 1 = 1-33\% \text{ (low linkage level)} \\ 2 = 34-66\% \text{ (moderate linkage level)} \\ 3 = 67-100\% \text{ (high linkage level)} \end{cases}$$

where *sl* is the degree of backward linkage that is defined by the percentage of a firm's material input that came from domestic sources or share of profit re-invested in the year 2002.

5   Results

First before presenting results for the estimated equation, it is important to highlight the geographical distribution of input sourcing by Asian investors for the 2002 period. What is easily noticeable from Table 3 is the dominance of Asian imports in the mix. Among all sixteen firms for which data was available only three firms made purchases of between 1% and 2% of their input material from Lesotho. One firm procured 100% of its intermediate materials and another two bought just 1% and 8% of their own textile, fabric and related materials usage from South Africa during the period under consideration. Apart from all these, the remainder of input usage by all firms for the reference year was imported from Asia to give an average of about 93% of Asian share in the regional composition. Given the fact that the average age of firms in the sample is approximately five years which is reasonable enough for significant manifestations of local patronage, this figure says a lot about the ongoing suppression of the emergence of local suppliers by Asian imports.

Table 3 Geographical mix of input procurement by Asian garment firms in Lesotho (2002)

	Percentage of material input usage that came from:		
Firm	*Lesotho*	*South Africa*	*Asia*
1	2	8	90
2	0	0	100
3	0	0	100
4	0	0	100
5	2	1	97
6	0	100	0
7	0	0	100
8	0	0	100
9	0	0	100
10	0	0	100
11	0	0	100
12	0	0	100
13	0	0	100
14	0	0	100
15	1	0	99
16	0	0	100

Source: Authors' calculation

Figure 2 Value of Lesotho's textile, fabric and related garment material imports from selected Asian countries (2002) (US$)
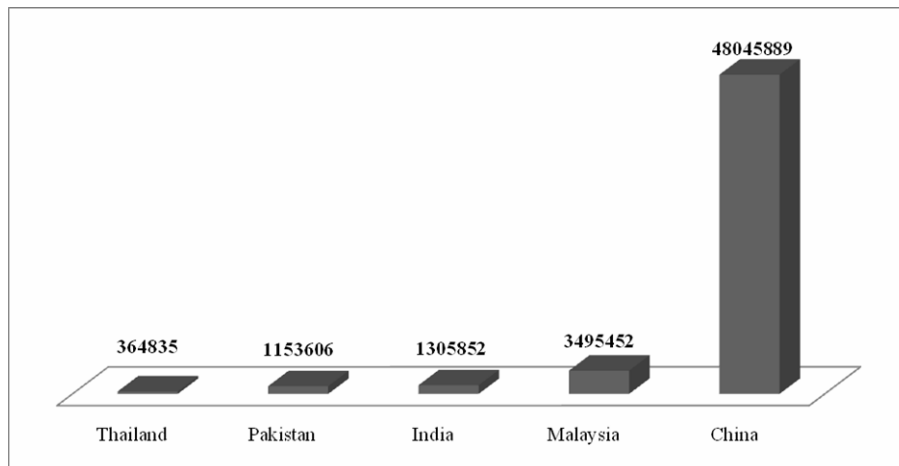
Source: Authors' calculation based on data from UNCOMTRADE (2008)

In the absence of specific information from the data directly revealing that these firms' Asian imports were coming from China and not any other Asian source a follow up interview was conducted on all existing garment firms in 2006. Overwhelming majority

of respondents revealed that China was their main supplier of input materials. This fact has also been recently confirmed by another study which finds that AGOA clothing producers especially the Taiwanese who dominate apparel production in Lesotho source their textiles from China (Kaplinsky et al., 2007). Figure 2 further provides snapshot evidence that Lesotho garment producers import their intermediate goods largely from China and not from any other Asian location. While the value of textile, fabric and related materials that the country imported from China in 2002 is close to US$50 million, it is revealing that none of the comparator economies recorded a trade value that is up to 10% of this.

But how is this revealed dependence on China impacting on supplier linkage development potentials of Asian Clothing producers in Lesotho? Results of estimated equations are now presented for answers. Table 4 reports regression outputs for the two different specifications of dependent variable (Model 1 and Model 2) considered. Each regression was corrected for heteroskedasticity by following the method suggested by Harvey (1976). In both cases the proxy for very large size (*xlsz*) was dropped because it was found to be highly insignificant in the respective nested equations.

Table 4   Ordered probit regression results for supplier linkage development

Variable	*Model 1*		*Model 2*	
	Coef.	*P > |z|*	*Coef.*	*P > |z|*
ssz	0.30	0.44	−0.49	0.40
lsz	−0.56	0.16	−0.52	0.28
fb	0.99	0.02	0.36	0.60
gt	1.43	0.01	−0.81	0.19
fl	−1.35	0.08	−0.98	0.17
asgt	−1.39	0.01	−1.03	0.07
age	0.01	0.73	0.04	0.08
psp	−1.08	0.00	−0.49	0.20
ntw	−0.47	0.21	−0.24	0.56
Number of *obs*	69		69	
Log likelihood	−63.26		−42.79	
BIC	−114.81		−155.76	
AIC	2.18		1.58	

In general, the results confirm the hypothesis that resident Asian clothing manufacturers are impacting negatively on supplier linkage development in Africa in general and Lesotho in particular. The estimated coefficient of the variable (*asgt*) has the expected negative sign and significant across the two models[9]. Focusing on Model 1 for the rest of the explanations it is interesting to note that the statistically significant positive linkage effect of the garment firms mutates into a negative effect as soon as the variable is refined to take account of only those ones that belong to the Asians. The other predictors of linkage development that have varying levels of significant association with the explained variable are food and beverages sector (*fb*), garment (*gt*) and poor supply potential (*psp*). The coefficients of all of these variables (*except gt*) turn up with their anticipated signs.

To have a better grasp of how the Asian firms are impacting on local linkages, Table 5 reports results of the marginal effects estimates for the ordered probit equation with respect to all of the significant variables in Model 1. As can be seen the incidence of Asian ownership in the garment sub-sector is associated with a decrease of about 28% in the predicted probability of being strong on linkage [high linkage (3)]. Thus, on the basis of this finding reasonable inference can be made that Asian garment producers' reliance on imports from China is working against the interest of development of local supply base.

Table 5   Marginal effect for the ordered probit estimates

	Linkage 0	Linkage 1	Linkage 2	Linkage 3
	(No linkage)	*(Low linkage)*	*(Mod. linkage)*	*(High)*
asgt	0.51	−0.19	−0.03	−0.28
fb	−0.33	−0.01	0.02	0.33
sp	0.40	−0.09	−0.02	−0.29
gt	−0.49	0.02	0.03	0.44

6   Conclusions

In the unfolding efforts to understand how the rising profile of China's global competitiveness is impacting on development in other regions the direct manifestation of the competitive trade impact arguably remains the least understood. This study made attempt to shed some lights in this regard by investigating the connection between China's position as a top global exporter of apparel intermediate input materials and industrial upgrading in SSA apparel development project.

Central to the contribution of the paper is the argument that the supplier linkage development potentials of member firms of the regionally integrated Asian apparel production and distribution network that externalised part of their downstream operations to African shores are currently being undermined by the Chinese factor. The paper evidenced this proposition by reference to experience of the small landlocked country of Lesotho which is arguably the most significant beneficiary of Asian direct investment in Africa apparel sector in recent time. The results of this country specific and micro level analysis confirm all expectations on the two specified inter-related fronts. One, Asian firms engaged in the country's apparel business sourced a very large percentage of their input usage (around 93%) in 2002 largely from China. Two, consequent on this, the incidence of Asian presence in the country's apparel business is associated with a 28% decrease in predicted probability of being strong on the development of local suppliers.

Obviously the most important conclusion that can be drawn from these findings is simply that Lesotho as this case study has shown and probably other African countries with significant trade and investment connection with Asia in the apparel sector are currently not reaping the fully development potentials of their ties. China's competitiveness and strategic position within the Asian apparel production model is inhibiting the potential contributions of resident Asian investors towards the development of local suppliers and hence industrial upgrading in SSA.

Luckily however, scope for policy intervention exists. Cost consideration was earlier recognised as a key influence on decision to outsource and upgrade chain activities. While market access advantages like those guaranteed by trade preference agreements do play some roles in facilitating the location of network activities to beneficiaries' homeland, successful upgrading of these activities would ultimately be determined by the relative efficiency of doing business in the region. In this regard, more would have to be done by the government of Lesotho to improve on the competitiveness of its environment and encourage Asian garment firms to look inward. Measures can include improving the quality of service deliveries in critical areas of efficiency drivers such as power and water supplies as well as transport and communication services. As earlier recognised, the provisions of these services are on current form relatively poor and may not be unconnected with the country's weak competitiveness. Furthermore, as unavailability of local suppliers also emerged as an important issue, targeted supplier development incentives such as those that helped ensure the construction of the country's first denim plant recently would be required.

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Notes

1   The Agreement on Textile and Clothing came into force on 1 January in 1995 to replace the Multi-Fibre Agreement (MFA) which had hitherto governed trade in textile and clothing between developing and developed countries. Its aim was principally to secure removal of restrictions applied by some developed countries under the MFA regime to their imports of textiles and clothing items from developing countries over a ten year period.

2   The AGOA is a trade related development assistance initiative of the USA. It was launched in May 2000 to provide preferential market access to US imports of apparel and other products originating from qualifying SSA countries. One study reckons that about 10% of the 50,000 jobs that AGOA helped create for Lesotho between 1999 and 2003 was lost during the crisis that dawned with the expiration of ATC quota restrictions (Rolfe and Woodward, 2005).

3   In a conceptually related treatment Coe et al. (2004) describe how the entry of BMW (an automobile MNC) into Eastern Bavaria helped facilitate the emergence of local suppliers in the area: upon commencement of operations in an environment with no visible presence of domestic component suppliers, BMW deployed its significant global buying power to persuade two US suppliers (Lear Corp. and Modine) to establish subsidiary plants in Bavaria.

4   The acronym 'NIEs' stands for Newly Industrialising Economies and includes Hong Kong, Singapore, Korea, and Taiwan.

5   In the case of AGOA, this desire to minimise cost by restricting the African operations to their most economically justifiable activities will undoubtedly explain why countries like South Africa and Muaritius that are not exempted from the apparel cummulation provisions failed to attract as much *fdi* as their LDCs regional neighbours who qualify for such benefits.

6   The words firm, establishment and plant are used interchangeably.

7   This is exactly what the Nien Hsing group (a garment producer with about three subsidiaries in Lesotho), did when it opened a denim fabric plant: The Formosa Textile Mill. This company produces denim fabric, which is a material input for garment manufacturing and supplies most of its output to the three plants that belong to the group.

8   To verify the consistency of this specification alternative banding for the dependent variable was considered and affirmative confirmation was made in results not reported here.

9   Conventionally, *p* values of less than 0.05 indicate significance. But if one could tell a priori the sign of a variable's coefficient and the estimated result turns up with the expected sign then *p*-value should be halved (Daykin and Moffat, 2002). In the case of *asgt* and *age* variables in Model 2 that the exercise predicted and confirmed negative and positive values for their respective outcomes, halving their p values gives statistically significant results.