# Part III: Trade, Infrastructure and Regional Integration

# Market Access for Africa's Transformation and Development: What's lacking and why it's a problem?

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## Abstract

This paper provides a perspective to some puzzling dynamics of market access initiatives for Africa's export competitiveness in global trade. At the beginning of the 1980s, African countries contributed marginally and narrowly to the global trade. As the difficulties with trade got deep, some partners of the region, particularly the 'Triad nations', adopted legislated/exogenously-driven trade advantages, granting up to 30 percent cost reduction and 6,400 items duty-free and quota free, in some cases, to regional exporters against exclusion from and narrow participation in the global economy. Over time, preference erosion has meant that the impacts of some of the initiatives, particularly those related to extensive margins of trade, were short-lived as their provisions ran into other problems or expired. The paper applies the logic of Area of Influence and Influence Mobility models to add a « magnification » perspective, a micro-macroeconomic relationship between the legislated export advantages and competitiveness, and the erosion of these advantages. In the algorithm of models, the binding theme is that for trade initiatives to be sound and economic growth sustainable, they must not only meet short-term intensive trade margins, but also help catalyse long-term domestic factor input competitiveness. Later developments strongly suggest that the export boom due to GSP initiatives proved to be short-lived because legislated advantages were dominating the region's margin of exports related to these initiatives. We propose Törnqvist index methodology as an innovation for evaluating « magnification » effects (domestic human capital input-quality changes) of the legislated export advantages. Generally, the initiatives have not been complemented by domestic base knowledge and an iterative productive development process through vertical specialisation. Thus, there

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are many steps African governments must take to boost their global trade competitiveness and contributions.

**Keywords:** Market Access, Legislated Export Advantages, Factor Input Export Advantages, Area of Influence, Influence Mobility, Extensive and Intensive Margins of Trade, Preference Erosion, Vertical specialisation, magnification effect, Törnqvist index, Domestic Base Knowledge, Markov Chains, Sustainable Economic Growth and Development.

## 1. Introduction

Globalisation, the formative idea of our age, continues to affect our economic geography in ways that we are only beginning to understand. It has brought with it a new breed of trade arrangements in which groups of countries use market access schemes in new ways to reshape trade between them. Africa has had its fair share of these trade arrangements. But, are the provisions of market access initiatives and the generalised system of preferences (GSP) sufficient to resolve the region's export difficulties in a sustainable manner? What does the recent erosion of the preferences mean for trade by beneficiary African countries? This paper posits that GSP initiatives for Africa could only lead to sustainable rise in Africa's export margins if countries also highlight the trade magnification (internalisation) effects. This implies that changes in certain exogenous/imported variables could lead to larger changes in the corresponding endogenous variables. Market access initiatives in the World Trade Organisation (WTO) are the conditions, tariff and non-tariff measures (including quota), agreed by members for the entry of specific goods into their markets. These are binding.

In the 1980s up to 2000, as African countries struggled through economic downturns and contributed an average of about three percent of global trade, some of the region's partners, especially the Triad nations – the European Union (EU), Japan, and the United States, adopted major new GSP schemes to improve their export competitiveness. The schemes include the African Growth and Opportunity Act (AGOA), Everything but Arms (EBA), Cotonou Agreement for renegotiating the preferential trade and aid links between African, Caribbean, and Pacific countries with the European Union (ACP-EU) and the Tokyo International Conference for Africa's Development (TICAD).

The GSP initiatives were to help African countries to trade their way out of poverty in the new « *trade is better than aid* »' paradigm (see for instance, Amsden 2001). The initiatives aimed at strengthening economic development, mainly through extensive[2] in addition to intensive[3] margins of export for the beneficiary African countries, particularly the least developed. The

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2.  By extensive margin of trade, we mean the appearance and disappearance of exported products (diverse exports).

principle is that more exports, under these initiatives, would make these countries major partners in global trade and improve quality of life of the populations. The initiatives, rather than « *fire fighting* » humanitarian emergencies, are to help attract much needed foreign capital, boost value-added exports, create employment, secure technology, expand the economies, and reduce poverty.

Apparently, the initiatives rightly assumed that promoting exports could be a rewarding growth strategy for these countries. But sustainable exporting could also be a complex and challenging process. It requires that countries do more than passively open up their economies and wait to grow (see for instance, Gamberoni 2007). For Africa, the concern is whether there is enough latitude for increasing the extensive margins of trade for the version of any preferred goods from the beneficiary countries. Also important is the question related to the level of vertical specialisation[4] created during the period of implementation of these initiatives for long-term transformation of the economies. The many years of implementing the initiatives have confirmed some of the initial arguments.

The end of 2008 would have marked nearly a decade that the major new market access initiatives have been implemented in countries of the region. Success was achieved in generating the much needed extensive-oriented margins of trade in some focus industries, such as apparel and textile and a few other products, under AGOA for instance, although the results have not been encouraging lately. In terms of intensive margin of trade, traditional products such as natural resource exports continued to do well. In the agricultural exports, problems were prevalent from the onset, particularly those related to standards – sanitary and phyto-sanitary conditions – though some countries managed to increase their exports in this area through the GSP initiatives as well.

Particularly, the end of multi-fibre arrangement (MFA) in 2005 marked a milestone in the market access schemes for African countries. At the end of MFA, rapid foreign investment inflows to the apparel and textile industry as a result of AGOA in African beneficiary countries such as Kenya, Madagascar, Mali, Lesotho, Namibia, South Africa, Swaziland, and Zambia, were being withdrawn. In Lesotho alone, where growth was rapid and some of the largest foreign affiliates were in the apparel and textile industry, six of them closed business in 2005 at the end of MFA, leaving 6,650 garment workers jobless. With the floundering of the GSP provisions for Africa, new concerns are raised about the region's long term role in future global trade using these

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3.  By intensive margin of trade, we mean rise and fall of the export volumes of particular products (more of the same).

4.  Vertical specialisation occurs when a country uses imported intermediate parts to create a commodity it later exports. That is, the country links sequentially with other countries to produce a final good.

initiatives as a booster. With this, the key question answered in this paper is: What are the underlying causes of the successes and failures of the schemes in Africa?

To answer the question, we review the progress and analyse the difficulties by partitioning the effects of GSP schemes into legislated/exogenously-driven effect, and structured (labour for instance) factor input competitive advantages.[5] We analyse the schemes and their erosion through the Area of Influence (AOI) and Influence Mobility (IM) models.[6] In the logics of the model, legislative advantages in the initial effects complement factor input competitiveness. The national level of competitiveness is optimal. In the second setting, the legislative advantages expire and national competitiveness is subgame perfect, and margins of export performance worsen. But if the magnification effects as a result of base knowledge for incubating domestic learning and innovation process via the foreign inputs is large and long enough, the effect will dominate development through an upward transformation shock on investment inflows and diffusion of technology and innovations. There will be no economic decline (Nwokeabia 2007).

Details of the model are provided in section three of this paper. Grossman and Helpman (1995), for instance, had suggested that a country's ability to absorb foreign technology embodied in imports depends on its base knowledge, among others. In the absence of these, « open door to globalisation turns into empty door for trade ». That said, the remainder of this paper is partitioned as follows. This introduction is followed by a detailed background of the decline in Africa's trade and the selected GSP initiatives, particularly AGOA, adopted to correct this decline. The section after background discusses the pointers to progress in the implementation of the initiatives. The progress, however, is found to be short-lived in many benefiting countries, leading to failures that are explained in section four. Section five provides more details on the AOI and IM models, providing perspective to the causes and dynamics of the difficulties related to these initiatives. The conclusions and policy recommendations are included in sections six and seven.

## 2. Background

Why are market access and trade-preference schemes necessary to boost Africa's export competitiveness? Where have these schemes been implemented? Did they meet expectations? A vast array of pointers provides good indication to these questions.

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5. In this paper, legislative advantages refer to government interventions through tariffs and quotas, that enable countries to competitively trade on products over which they would have had problems trading in an open global competition without such advantages.

6. For more on this models, see Meyn and Tweedie 2005, and Monserud 1976.

**Figure 1. *Shares of global exports (%)***



*Source:* UNCTAD GLOBSTAT (http://uds.unctad.org/IntraStat/TableViewer/tableView.aspx).
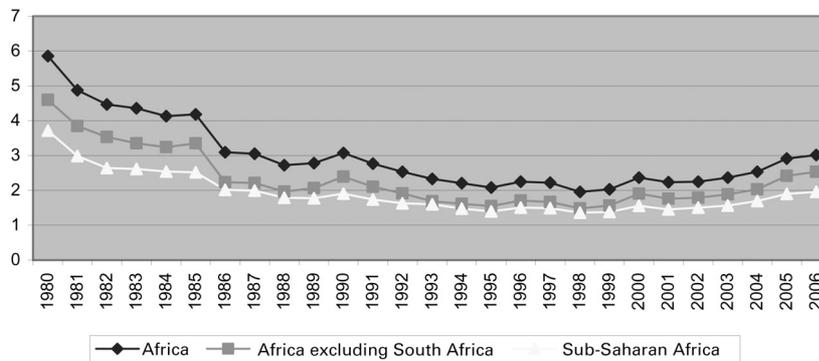
At the onset of poor economic performances in Africa in the 1980s, the region's annual exports amounted to $119 billion, about six percent of world exports. Sub-Saharan Africa (SSA), in particular, contributed about $75 billion of exports, equivalent to just about four percent of world exports in 1980 (Table 1). As the economic crisis deepened, Africa's contribution to global trade, which was already low, had declined further and by 2000, the region's share was about two percent of the global total, recovering only slightly to about three percent by 2006 (Figure 1). Most important about the rise and fall of Africa's exports was that they concentrated on traditional agricultural commodities and natural resources. Less than one percent of the exports were on value added exports, and much of that was for intra-regional trade. As African countries did not stand full global competition, especially in adding value to many of their commodity exports for many reasons, in addition to deteriorating terms of trade of commodities compared with the manufactured good imports, the economic performances further turned negative. The region's global exports, even as it increased in volume, had declined as a share of global exports by about 60 percent in 2000, from the six percent in 1980 (Figure 1).

Impact of the poor economic and trade performances was dramatic on many indicators, including savings, investment and poverty, all which continued to worsen until 2000. In response to the region's poor performance in global trade and worsening economic performance, Africa's development partners had envisaged a progressive transition process through the GSP initiatives in which a sustained and accelerated economic growth and trade could be achieved through expansion of market access for the poor countries.

Some of the partners of the region had opened new avenues for optimism through the GSP trade initiatives. The driving objectives of the GSP initiatives and trade preferences were that openness and international trade affected technological progress, productivity, production, and therefore export

growth. The market initiatives, AGOA and EBA, for instance, were assumed to create locational advantages for investors to increase the margins of export of Africa (extensive and intensive) to the markets of developed countries. The original objectives of the GSP were to: a). Increase export earnings; b). promote industrialisation and; c). accelerate economic growth. The initiatives offered tangible incentives for African countries to continue their efforts to open their economies and build free markets. AGOA, in particularly, expanded the list of products which eligible SSA countries could export to the United States subject to zero import duty to more than 6,400 tariff items. The arrangement is effective until 2015. In some cases, the duty-free and quota-free advantages due to AGOA amounted to up to 30 percent cost advantage for Africa-based exporters over their counterparts in the other non-AGOA countries that equally exported to the United States.

Consistent with the central aims of these initiatives and under a Special Rule for lesser-developed beneficiary countries of AGOA, for instance, those countries with a per capita GNP under $1,500 in 1998, will enjoy an additional preference in the form of duty-free/quota-free access for apparel made from fabric originating anywhere in the world. The Special Rule is in effect until September 30, 2012 and is subject to a cap.[7] In terms of improving the extensive margins of exports for participating African countries, AGOA intentionally targeted the apparel and textile industry for special benefits because of the system of apparel and textile quotas and the typically high import duties worldwide. Apparel and textile manufacturing is also labour-intensive. Thus, the provision of preferential treatment for those manufactured in the region immediately translates into the creation of employment opportunities and helps to diversify exports away from agricultural commodities and natural resources.

AGOA provides reforming African countries with the most liberal access to the United States market. It is available to any country or region with which the United States does not have a Free Trade Agreement. What is more; under the initiatives, dependence of the regional countries is reduced by expanding the opportunities for them to engage in trade under conditions that do not marginalise them from the globalisation process. AGOA also supports United States businesses in the region by encouraging reform of Africa's economic and commercial regimes specifically, which will build stronger markets and more effective partners for United States firms. The United States had also obligated a cumulative and generous allocation to trade building capacity activities of about $1.6 billion in 2007 for African benefiting countries.[8] We will return to this issue in section five of this paper

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7. Articles containing certain interlinings of foreign origin are eligible for benefits if the value of the interlinings (and any findings and trimmings) does not exceed 25 percent of the cost of the components of the assembled article. The interlinings permitted include only a chest type plate, a « hymo » piece, or « sleeve header, » made of woven or weft-inserted warp knit construction and of coarse animal hair or man-made filaments (for more on this, see www.agoa.gov).

8. *Source:* AGOA (www.agoa.gov).

when we try to explain some of the assumptions and difficulties that followed the effort to increase Africa's participation in global trade through GSP initiatives.

Assessing the impact and implications of what has been done to boost Africa's participation in global trade through the GSP initiatives, some positive outcomes have been realised, but some of that require further examination. By 2007, it would have been years or decades that some of the GSP initiatives, such as AGOA and EBA, had been implemented in African countries. And the question would be: Have they actually produced any success stories? In many ways, the pointed nature of these schemes had immediate and effective impact on Africa's exporters.

## 3. Pointers to progress

On the surface, and as noted from the infrequent data, African countries achieved some successes related to the GSP initiatives. Total exports from Africa more than tripled to over $360 billion in 2006, from $119 in 1980, and foreign direct investment inflows, some related to AGOA production, including for raw material exports, grew to an estimated $53 billion in 2007 from $0.4 billion in 1980. Particularly, AGOA was a lifeline for apparel and textile made in Africa, $1.3 billion of which was sold to America in 2006 and helped to attract foreign investment[9] inflows in the industry. Many benefiting African countries had also created employment for local labour force, despite the difficulties that followed. Some of these will be explained later. Particularly in value addition, apparel and textile exports from Africa to the United States increased three-fold. Two-thirds of Africa's apparel and textile exports were sent to the United States. At the end of 2005, about 200,000 jobs had been created in the apparel and textile industry since 2000.[10]

Illustrating the importance of AGOA apparel and textile trade preferences, figures show that the 19[11] SSA countries eligible to export clothing under AGOA accounted for 98 percent of Africa's apparel exports to the United States. The United States apparel and textile import from Africa increased by a remarkable 118 percent in the three years since AGOA was enacted. This strong growth in apparel and textile imports from Africa is even more impressive when viewed in the context of the United States economy, which has slowed down since the enactment of AGOA. Total United States apparel imports from all origins outside Africa have been virtually flat, growing by only 3.5 percent annually over the past two years.

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9. Foreign investment is here defined to include foreign private investment (direct and portfolio), public aid related to the initiatives and other grants for trade capacity building.

10. *Source*: *Africa Program* – « AGOA, Five Years Later: Lessons Learned, Challenges Ahead » (http://www.wilsoncenter.org/index.cfm?topic_id=1417&fuseaction=topics.event_summary&event_id=143669), 5 June 2008.

11. The number changed to 27 at the end of 2007.

Particularly on investment and capital inflows to Africa prior to 2005 in the apparel and textile industry, many foreign investors, mostly from China (including Hong Kong and Taiwan), India, and also the United States, exploited the "third-party fabric provision", under which the eligible African countries could import fabric inputs from non-AGOA states and export the finished product duty and quota-free to the United States. This gave producers in countries such Kenya, Lesotho, Madagascar, Mali, Mauritius, Namibia, Uganda, South Africa, and Swaziland up to 30 percent cost advantage over their non-AGOA competitors exporting to the United States. It attracted a lot of foreign investments. As a result, African countries, depending on the time and country under AGOA, enjoyed "exceptional" export growth in this specific area. In South Africa for instance, total exports to the United States increased by five percent from 2000 to 2001; from $4.2 billion to $4.43 billion. In South African Rand terms, the increase was even more impressive, rising from R25.41 billion in 2000 to R30.63 billion in 2001, or 21 percent.

In 2007, sub-Saharan Africa's exports to the United States trebled to $67.4 billion, while United States exports to sub-Saharan Africa (SSA) more than doubled to US $14.4 billion. Of the $67.4 billion in total imports to the United States, $51.1 billion of it was covered by AGOA agreements – six times more than in 2001. Also from the available data, African countries realised high margins of exports, including extensive margins related to value addition in apparel and textile products due to AGOA initiative. AGOA has benefited from 32 percent of South Africa's total exports. AGOA provisions helped millions of African families to find opportunities to build prosperity.

The South Africa performance is exemplary because of the high margins (extensive and intensive) of exports it exhibited since its participation in the AGOA initiative. According to the United States International Trade Commission (USITC), the total amount of AGOA exports from South Africa in 2001 was $923 million, of which $506 million represented normal GSP products and $417 million reflected the new products added by AGOA. AGOA exports were recorded in just about every industry sector, the most prevalent being automobiles, iron and Steel, clothing, chemicals, and foot products.

These exports represented about 21 percent of South Africa's total exports in 2001. In comparison, South Africa exported a total of $583 million in duty-free GSP products to the United States in 2000, or less than 14 percent of total exports.

South Africa did not just achieve progress in its intensive margins of exports, but also extensive margins necessary for long term development, employment, and poverty reduction. South Africa took second place after Nigeria, which benefited narrowly on the intensive margins of exports, in mainly petroleum, as the SSA country benefiting the most from AGOA. There were major "*new*" products exported duty-free from South Africa to the United States since 2001.

AGOA exports of motor vehicles parts and accessories, rose from $289 million in 2001 to $525 million in 2002, an increase of 82 percent. Of this, automobile exports grew by 103 percent, from $232 million to $472 million. South African clothing exports under AGOA grew from Rand 313 million in 2001 to Rand 1.064 billion in 2002. The USITC figures indicated that AGOA clothing exports from South Africa increased from $31 million in 2001 to $85 million in 2002.

Foremost among apparel and textile exports is Lesotho. Exports grew to $321 million from 2000 to 2002 after an increase of 130 percent. In Lesotho, historically, apparel and textile exports to the United States grew from $100 million in 1998 to $450 million in 2004, posting an average annual growth rate in excess of 50 percent. Apparel and textile industry employment grew seven-fold from 7,400 at the start of the 1990s to 50,000 in 2004, making the sector the country's largest employer.

In the major African AGOA-related foreign investment recipient countries, inflows have led to creation of new jobs. The United States was a leading provider of foreign direct investment to Africa. At the end of 2006, the United States direct investment position rose 52 percent from 2001, to $13.8 billion. The United States direct investment in Africa promotes economic development, supports United States trade with the region, and enhances the United States-Africa business partnerships. In Mali, for instance, a $12.5 million cotton-thread factory opened in February 2004. This facility was one of sub-Saharan Africa's plants outside South Africa, capable of producing quality thread for use in manufacturing apparel and textile for exports under AGOA. Mauritius was among the investors.

Many other AGOA beneficiary African countries such as Kenya, Madagascar, Mali, Mauritius, Namibia, Swaziland, and Uganda, achieved varying gains in investment inflows and exports related to this initiative. Generally, it can be said that the GSP initiatives, chiefly AGOA, were the catalyst for the remarkable industrial and export resurgence since 2000, giving the producers in Africa up to a 30 percent cost advantage over their non-AGOA competitors. In other words, very little of the surge in exports was as a result of local capacity and competitiveness growth.

As a result of this and despite the accomplishments, Africa's trade competitiveness in apparel and textiles exports, which was the only area in which extensive gains had been realised, came under increasing threat from China and other Asian countries with better cost advantage in production, particularly since the phase-out of the MFA and the introduction of "free-trade" in textiles and clothing through the Uruguay Round Agreement on Textiles and Clothing (ATC). The resurge of the threats also highlighted some problems that were not being resolved by the implementation of the GSP initiatives in Africa.

## 4. Problems despite progress

Despite the different initiatives designed to help African countries diversify their production and export bases (increase the extensive margins of its exports), it is easy to say that little transformation has been achieved. Apparel and textile production was emphasised in the AGOA initiative. In this focus-industry, the extensive margins of exports had been very volatile, rising very rapidly in many benefiting African countries mid way through the implementation of the initiative, but rapidly declining when the legislated advantages were eroded in 2005. At the end of 2007, AGOA imports amounted to $51.1 billion, more than six times the amount in 2001, the first full-year of AGOA implementation. Unfortunately, petroleum products accounted for the largest portion of AGOA import, with non-petroleum AGOA trade totalling about $3.4 billion in 2007. The non-petroleum component of the AGOA imports included mainly agricultural products, such as fruits and nuts, prepared vegetables, cut flowers, prepared seafood and essential oils. As explained before, AGOA has been a lifeline for apparel and textile made in Africa, $1.3 billion of which was sold to America in 2006 (annex tables 1 and 2.).

The most discerning fact about the problem related to the objectives of AGOA, for instance, is that while United States-Africa trade has expanded dramatically since its inception in 2001, it has been the result of surging energy demand and prices rather than AGOA trade preferences for diversified products. Also, even with the limited successes and contrary to expectations, the region's share of global exports recovered a little to just 2.5 percent in 2006, about its half in 1980 at the onset of the crisis. Most of the foreign investments for AGOA-related exports are now concentrated in minerals, mainly oil and metal production. Particularly, non-oil AGOA related trade to the United States had declined by 16 percent, mainly due to a decline in AGOA apparel import.

But by 2006, it had become even more obvious that most of the market access-related achievements, especially those related to new export products (extensive margins of trade) were narrow and could not be sustained. Growth of export was mostly intensive. The export portfolios of most African countries have become more concentrated, and ever more reliant on a handful of commodities such as oil, gas, minerals and metals. This has inevitably raised questions about the success of trade-diversification schemes, such as the United State's AGOA, under which 98 percent of the imports from the eligible sub-Saharan countries entered the United States duty-free since 2000.

Energy related oil and gas accounted for 81 percent of all United States imports from SSA in 2007. The only other sizeable items were precious minerals (platinum and diamonds), with an eight percent share, clothing and textiles (1.9 percent), and metals and ores (2.1 percent). In other words, AGOA is falling seriously short in terms of promoting diversification of both production and exports in SSA. Nor are there signs of any improvement. In the first quarter of 2008, AGOA imports were up by US $5.2 billion. Oil, gas

and minerals accounted for more than US $5 billion of this, and South African vehicle exports US $232m. Once again, other exports declined, with sales of clothing and textiles – the great hope of AGOA planners – down 17.5 percent.[12]

Too often, it is forgotten that there is more to AGOA than trade in goods and services. Foreign investment, often trade-related, is a key positive influence. In 2005, the United States-affiliated companies had total assets of more than US $90 billion in SSA, with Nigeria being the main site of United States investment (with US $17.6 billion, or 19.5 percent of the total). South Africa is in second place, with US $12.1 billion, or 13.4 percent of the total. The United States direct investment position in SSA, excluding investments of affiliated businesses, was much smaller, at just under US $14 billion. Almost one-third of this (30.8 percent) was oil investment in Equatorial Guinea, while South Africa accounted for some 28 percent. The other main investment locations were Angola (eight percent), Mauritius States (five percent), Nigeria (2.5 percent), Côte d'Ivoire (2.2 percent) and Liberia (2.1 percent).

By 2006, foreign investment in apparel and textile industry, which had significantly grown during 2001-05, had run into increasingly serious problems in the AGOA eligible and benefiting African countries. With the abolition of the ATC and the MFA in 2005, competitiveness in the Africa textile exporting countries under AGOA was rapidly eroded. They lost market share in the United States market to Asian exporters, especially China, while export prices for clothing have fallen by 10-15 percent.

In recent years, countries such as Kenya, Mauritius, Lesotho, and Uganda had begun to receive foreign investment in their textile and apparel industry, in part under the AGOA, but the trend changed following the end of MFA quotas in 2005. A number of foreign investors in Africa in that industry have been relocating.[13] In Mauritius, there was a 30 percent decline in the volume of garments manufactured in 2005, following the departure of some Hong Kong (China)-owned companies. In Lesotho alone, where some of the largest foreign affiliates were in the garments industry, six of them closed in 2005 at the end of MFA, leaving 6,650 garment workers jobless. In South Africa, it is feared as many as 50,000 apparel and textile workers could lose their jobs following the end of MFA.[14] This shows that the value of preferential market access initiatives is limited when domestic production capacity is inadequate.

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12. *Source*: « US-African Trade: Waiting for an Industrial Revolution » (Trade-diversification schemes such as AGOA don't seem to be having much impact: Surging energy demand and prices are driving the expansion in US-African trade), *Business Africa main report, EIU* (http://www.eiu.com/index.asp?layout=displayIssueArticle&issue_id=463618631&article_id=513618636) 16 July 2008.

13. *Source:* « Urgent need to broaden the base: Island takes a buffeting with lost income from its clothing and sugar industries », *Financial Times*, 14 March 2006.

14. *Source*: « Lesotho textile workers lose jobs », 12 January 2005. *BBCNews* (http://news.bbc.co.uk/1/hi/business/4169587.stm).

**Table 4. *Competitiveness indicators***
***US$ unless otherwise indicated***

|                            | China | India | Kenya | Lesotho | Sri Lanka | Madagascar |
|----------------------------|-------|-------|-------|---------|-----------|------------|
| Machine operator wage      | 45    | 75    | 65    | 95      | na        | 65         |
| Labour cost per shirt      | 0.29  | 0.17  | 0.18  | 0.19    | na        | 0.16       |
| Daily shirts per worker    | 22    | 16    | 15    | 18      | na        | 15         |
| Shipping cost to Paris     | 400   | na    | na    | na      | 675       | 820        |
| Shipping cost to New York  | 1000  | na    | na    | na      | 1395      | 1395       |
| Order to arrival time (days)| 15   | na    | na    | na      | 35        | 35         |

*Source:* World Bank, Madagascar: Diagnostic Trade Integration Study, 2003.

About aspects of the capacity problems, AGOA was intended to apply to 48 African countries. At various times the eligibility requirements, including more favourable and flexible rules of origin, have changed. However, only 38 African countries[15] had qualified by the end of 2006. To date, only 18 of these countries have met the rules-of-origin requirements. Most importantly, only about seven countries have attracted AGOA-related foreign investment inflows, concretely in the apparel and textile production.[16]

Additionally, the shortage of capacity and skilled manpower has elevated the cost of production in these countries. Wages of workers in a typical African country striving to attract foreign investments for export production such as Lesotho are much higher than those in Bangladesh and China, for example, constraining the relative elasticity of their supply.[17] Thus, more African countries that benefited significantly from the legislated advantages, both in terms of the extensive and intensive margins of trade due to these GSP initiatives, are quickly witnessing regression in attracting foreign investment and increasing their export of value-added goods as a result of difficulties beyond the initiatives. The competitiveness indicators were not favourable for many African countries compared with their Asian competitors (Table 4.)

Thus, while market access is important for the region, it is becoming increasingly obvious that other factors such as domestic capacity and competitiveness, including technical competence, carry a higher weight over the

15. The 38 African countries are: Angola, Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Chad, Congo, Cote D'Ivoire, the Democratic Republic of Congo, Djibouti, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra-Leone, South Africa, Swaziland, the United Republic of Tanzania, Uganda, and Zambia. Two African countries have become eligible for AGOA since 2007: Mauritania in June 2007 and Togo in April 2008. As of May 2008, 27 African countries were eligible to receive AGOA's apparel and textile benefits.
16. For a description of progress with respect to exports and foreign investment in export-oriented production in some AGOA beneficiary countries, including Lesotho, Mauritius, Mozambique, South Africa, Swaziland and Uganda see *WIR04*, p.91, ff4 and AGOA website (www.agoa.gov).
17. « Africa industry: Looming difficulties for textiles », *EIU Viewswire*. 20 July 2007.

short-term legislated advantages for the initiatives to yield better results to make Africa a stronger market and an effective contributor to global trade.

As indicated in the introduction, the intensive margins of exports related to some commodities and natural resource exports continued to do very well under AGOA. With the sharp increase in the price of major commodities, export earnings for the producer countries of Africa to their partners to fill the privileges of the market access initiatives continued to surge. However, many have indicated that concentration on crude export of natural resources is unlikely to lead to sustainable development in Africa (see for instance, Jordan 2007). In the agricultural sector, problems were overwhelming from the beginning. For example, the fish industry for exports to the European Union was faced with serious problems. In 1997, the EU imposed a ban on all fresh fish imports from Uganda, Kenya, and Tanzania because of what it considered poor sanitation facilities, inadequate health and environmental conditions, and a lack of basic infrastructure for processing fish.

Simply put, the technology being used was rudimentary. It did not meet international standards. Fish-landing sites lacked such elementary « infrastructure » as ice, potable water, adequate shelter to protect fish from contamination, electricity to run sanitation equipment, and lavatories. At factories where the fish were cleaned and filleted, sanitary, health, and environmental conditions were inadequate. Layouts and structural designs were unsatisfactory. The translation of international guidelines into good fish-handling practices proved to be difficult because of capacity constraints. The ban was lifted in 1998, but from April 1999 to October 2000, another ban was imposed on fisheries from Lake Victoria, Uganda. Fish exports from Uganda dropped. In value terms, the revenue dropped from $39 million in 1996 to $28 million in 1997 (UNCTAD 2007). In the manufacturing sector, foreign investment due to trade preferences for clothing exports were likely to be reduced further when the third-country provisions under the AGOA and the bilateral agreement restricting China's exports to the United States was set to expire in 2007/08.[18]

Generally, African countries benefiting from the GSP market access initiatives such as AGOA mainly lacked entrepreneurship and the low production costs that foreign investors would need if they were to set up more advanced large-scale activities to increase the extensive margins and value of their exports. In Botswana, Namibia, and South Africa, a high cost of production is still a major obstacle to the drive by the governments for greater beneficiation of diamond production. Diamond polishing and cutting in South Africa cost up to $40 per rough carat in 2005 compared with $10 to

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18. Under the AGOA deal, Africa-based clothing exporters are able to import fabric from the cheapest available suppliers while still enjoying duty-free access to the United States market. When this concession expired, some of the foreign-owned clothing firms in eligible African countries relocated elsewhere.

$14 in India.[19] This further weakened the drive to promote industrialisation in Africa through international trade. It also emphasised the fact that Africa's industrial progress required competitive production capacity in addition to better market access (e.g. through AGOA and EBA) and more welcoming regulatory frameworks.

In the next section, we aim to explain some of the challenges and complexities behind the failed attempt to industrialise Africa and boost its global trade through GSP initiatives. This will help narrow the analysis to concrete recommendations on the way forward.

## 5. Why the problems

At the best of times, exporting can be a complex and challenging process. Yet, when it is approached with careful organisation, exporting can be a rewarding growth strategy for any developing country, including the beneficiaries of the GSP initiatives in Africa. In the purview of the AOI and IM models, we add an input magnification (learning and innovation) perspective to some of the underlying factors behind such complexity and challenges.

The AOI and IM models are a set of rules used to generate dynamics (magnification effect), such as for changing influential trade inputs. The mobility model assumptions are that policy and factor-input nodes move in random directions at random speeds. It captures the simultaneous presence and trajectories of influence and their pattern in a variety of random and deterministic ways. The movement of certain policy nodes (e.g. legislated advantage, for instance) is affected by their surroundings and the movement of other forms of policy nodes (e.g. those meant to increase capacity competitiveness).

More technically, the influence model is a discrete-time Markov process[20] whose state space is the tensor product of the statuses of all the local variant of the Markov chains (see for instance, Meyn and Tweedie 2005 and Verghese C. and Asavathirathan 2000). Thus, interactions among the policy nodes occur when a change of status at one node alters the transition probabilities of the others, which then alter the others (complement or compensate for them), and so on.

To explain the possible dynamics of the GSP initiatives on trade and development growth, for instance, there is an assumed substantial positive externalities to human capital inputs, and perhaps to physical capital due to these initiatives, to the extent that they embody new technology. The classical

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19. *Source:* Financial Times (Tuesday June 28 2005). Beneficiation: In search of carrot that may persuade miners to process locally.

20. The Markov property means that, *given the present state*, future states are independent of the past states. In other words, the description of the present state fully captures all the information that could influence the future evolution of the process. Future states will be reached through a probabilistic process instead of a deterministic one.

and neo-classical results of diminishing returns are avoidable through such economy-wide spill-over effects. Basically, the argument is that the first (short-term) level impact increases the intensive margins of trade at a decreasing rate (Aghion and Howitt (1998) and Abromovitz (1986), while the magnification effect leads to extensive margins of trade at a gradual but increasing rate.

The model assumes a variable return to scale due to the factor input that could be indexed (see for instance, Aghion and Howitt 1998). Total output and employment are dependent on the accumulated capital stock (human, intellectual, and physical) (see for instance, Romer 2000). In this formulation, the level of learning and the rate of its amplification are not determined externally. Rather it is a function allocation of productive human capital to learning activities (knowledge incubation). Typically, only a part of human capital (labour) is used for physical production process. The other part of human capital (intellectual) is used for trade magnification – learning process. If, therefore, human capital is isolated and divided between the learning function and physical production, innovation arrives randomly at a rate (influence mobility) indicating the highly variable productivity of the research (Muhamad U. Ilyas and Hayden Radha 2007). The productivity of research will have a Poisson/random distribution.[21] For more on Poisson distribution, see Kuznets (1966).

Therefore, for taking advantage of a reduction in the entry costs (which is imposed by the GSP initiatives) that implies an increase in competitiveness in the research and innovation sector, the steady-state growth rate of the economy has to be transformed. A reduction in the entry cost in the business through GSP amounts to increasing the value of and number of actionable knowledge (rate of innovation per research firm). This is because the steady-state growth rate will also increase as a result of lower entry cost and more firms seeking to participate in production. In this context, growth becomes partly an endogenous process incorporating the innovation in each research facility, thereby increasing the size of the technological improvements and total number of research facility firms in the economy.

In simple language, what this model is saying is that in international trade, the domestic utility of the inputs emanates through two mechanisms: The level effect and spill-over effect (magnification). In the level effect, the number of differentiated products rises in the short-term due to availability of foreign varieties and intermediate goods. In the spill-over effect, the number of producers increases. Competition also grows, leading to the search for more innovations. It also makes the efficiency gains per firm to rise. In the dynamics for the spill-over effect, the increased rivalry and competition leads

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21. Mathematically, Poisson process means that at the time T, the possibility of an innovation occurring is a random variable whose distribution is exponential with a deterministic parameter. It implies that an innovator may find a new invention/innovation in the process of solving the particular problem, at a time unknown to him. Even by allocating a large amount of his time and resources, it is still uncertain to the innovator when the next innovation may take place.

**Figure 2.** *Dynamics of adjustment plus a magnification of the influence of initiatives on Production*[22]
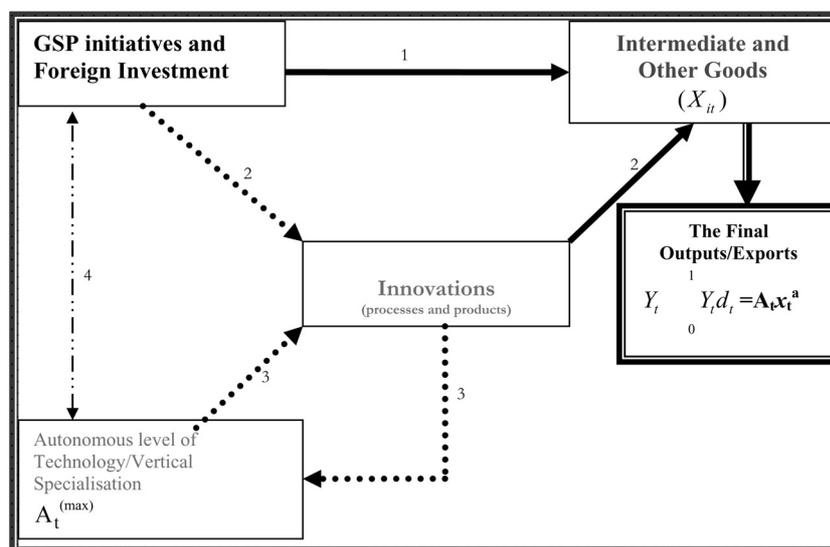


*Source:* Author.

to increased domestic innovations, employment, total factor productivity, and therefore economic growth. But this does not happen in a vacuum. The catalytic effect of the process starts with the availability of some local base knowledge for the incubation of external knowledge inputs.

Remarkably, if the value of cost reduction as a result of domestic capacity (base knowledge) contribution to the dynamics is large and long enough, the effect will dominate development through an upward transformation shock of investment inflows, diffusion of expertise, and innovations. If, on the other hand, the effects are large but not long enough, and factor input productivity that it compensates for remains constant, its end will also negatively impact the direction of development, which will witness a downward transformation shock through disinvestment that occurs when cost competitiveness goes down as overall cost goes up.

The mathematics of this magnification model can become a major algebraic diversion. As such, an elaborate detail of the model could be obtained in Dasgupta (1986). Some of the relationships are replicated in the schematic Figure 2 below. The two-way impact of international trade on production may help to keep trace of the conceptual scheme of the impact of GSP initiatives and trade on sustained economic growth. The aggregate output of the final good is the summation given by the growth rate of economy-wide knowledge, which is in turn governed by the spill-over equation.

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22. Initial and variant version of this was developed in Aghion and Howitt (1998).

As admitted at the beginning of this paper, as much as export could be a rewarding growth strategy for African countries, it could also be a challenging and complex process. Also given that the endogenous theory argument of the magnification effect of trade is still at its infancy, we present in Figure 3, a schematic design of the mobility of influence. This mechanism further illustrates the complexity of achieving transformation and development oriented rewards through export strategy in the frame of the AOI and IM models. $A_t^{(max)}$ is the variable autonomous level of knowledge (base knowledge). In the model, four main channels of influence are emphasised: 1). Direct contribution of GSP initiative to intermediate goods and exports; 2). contribution to innovation and knowledge; 3). spill-over of knowledge from the innovation process to the local economy through vertical specialisation, and; 4). contribution (symbiotic) to the foreign inputs in a gradual process of internalisation.

Countries that are only able to achieve level 1, in the schematic fail to sustain growth beyond legislated advantages (a good case of many African states). Countries that reach level 2 and 3 sustain growth with or without the legislated advantages. They are likely to internalise the innovation process and specialisations due to foreign inputs, indicated in level 4. At level 3, countries become contributors to investment in other countries. It is to be remarked that when a local economy is able to achieve internalisation capacity, the GSP initiative could be excluded from the model and the production process continues to sustain itself.

An index of these dynamics in the form of human capital input-quality change can be calculated in a multifactor productivity change as follows:

$$\Delta LnA = Ln\left(\frac{At}{At-1}\right) = Ln\left(\frac{Qt}{Qt-1}\right) - \left[W\kappa\left(Ln\frac{Kt}{Kt-1}\right) + Wt\left(Ln\frac{Lt}{Lt-1}\right) + Wm\left(Ln\frac{Mt}{Mt-1}\right)\right]$$

Where

Ln   = the natural logarithm of a variable
A    = multifactor productivity
Q    = output
K    = capital input
L    = labor input
M    = intermediate input
$W_k$   = the average share of capital cost in total cost in two adjacent periods
$W_l$   = the average share of labor cost in total cost in two adjacent periods
$W_m$   = the average share of intermediate input cost in total cost in two adjacent periods,

From this, the index of labour quality is computed easily by adding the growth rates, taking anti-logs, and indexing the resulting series to a base time (hour, month or year). A real change in wage rate approximates a fraction of change in productivity paid to the worker. A way of understanding the

productivity increase that leads to wage increase is that for this to happen, a worker that is already operating at full physical capacity must have acquired additional knowledge (technical skill) either through education or experience. When this starts to happen, it builds into a threshold of the ability to sustain what has been started. More details on this are available in the annex.

The simulation of this situation at 100 percent implementation of the GSP initiative is illustrated in Figure 4. This complex process, however, requires a challenging and sometimes tacit organisational capability that resembles the Japanese model of industrialisation with its public-technical support units for innovation on external inputs (Choi (1984) and Itoh and Urata (1994)). Through the system, the Japanese auto-industry, for instance, was able to contribute innovations to the global auto-industry and trade.

In the long-run, the increased learning and innovation causes R&D to rise and companies to produce new/brand goods. This increases their extensive margins of trade (see Branstetter (1996) and Dosi (1988)). In so far as openness and international competition increase learning and competition among domestic agents, innovation will be stimulated and growth will rise, given the availability of capable and willing capacity to undertake the required research activities. Proof of these dynamics and effects in the case of the Asian economies, particularly Japan, are available in Choi (1984) and Itoh and Urata (1994).
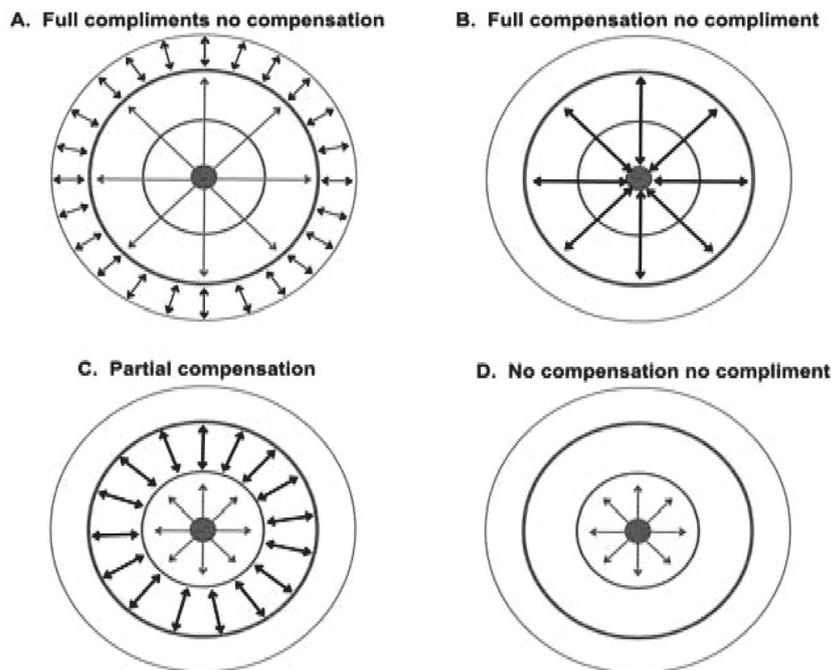
The conclusion is simple, based on these models. The classical and neo-classical result of diminishing returns and total collapse of industrial effort as GSP provisions are eroded can be avoided through economy-wide learning, spill-over effects of technology, and cumulative and base level of spilled-over knowledge. This is particularly so if a benefiting economy possesses sufficient domestic capacity to complement and therefore contribute to learning and innovation in the focus-industry.

Also, put in the arguments of the factor proportions (Hecksher-Ohlin model)[23] and optimal factor choice models, the development objectives of market access schemes could fail, given the absence of technical competence.

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23. The standard Hecksher-Ohlin (H-O) model, also known as « Factor Proportions Model », begins by expanding the number of factors of production from one to two. The model assumes that labour and capital are used in the production of two final goods. Here, capital refers to the physical machines and equipment that are used in production. Thus, machine tools, conveyers, trucks, forklifts, computers, office buildings, office supplies, and much more, is considered capital. All productive capital must be owned by someone. In a capitalist economy most of the physical capital is owned by individuals and businesses. In a socialist economy, productive capital would be owned by the government. In most economies today, the government owns some of the productive capital but private citizens and businesses own most of the capital. Any person who owns common stock issued by a business has an ownership share in that company and is entitled to dividends or income based on the profitability of the company. As such, that person is a capitalist, i.e., an owner of capital. The H-O model assumes private ownership of capital. Use of capital in production will generate income for the owner. We will refer to that income as capital « rents. » Thus, whereas the worker earns « wages » for his or her efforts in production, the capital owner earns rents.

The assumption of two productive factors (capital and labour) allows for the introduction of another realistic feature in production; that of differing factor proportions both across and within industries.

**Figure 3.** *A Four Step AOI Model (Intraspecific)*

A. Full compliments no compensation

B. Full compensation no compliment

C. Partial compensation

D. No compensation no compliment

*Source:* Author.

But all these could be compensated for through legislation.

The dynamics of the models are further explained in four-steps of Figure 3, with selected ideal structures of influence in which legislative advantage are complementary and compensatory to the factor input advantages. In step one, a total complement of the existing capacity takes place. The subsequent steps illustrate the Influence Mobility process. Steps two to four simulate the situation in many African trading countries that are equally beneficiaries of the existing initiatives. In step two, a total capacity hollow is compensated for by the trade advantages. Step three is a case of partial compensation for the hollow capacity. In step four, some structural capacities exist but the initiatives either do not give any advantages, or have expired.

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When one considers a range of industries in a country, it is easy to convince oneself that the proportion of capital to labour used varies considerably. For example, steel production generally involves large amounts of expensive machines and equipment spread over perhaps hundreds of acres of land, but also uses relatively few workers. In the tomato industry, in contrast, harvesting requires hundreds of migrant workers to hand-pick and collect each fruit from the vine. The amount of machinery used in this process is relatively small. In the H-O model, we define the ratio of the quantity of capital to the quantity of labour used in a production process as the capital-labour ratio. We imagine, and therefore assume, that different industries, producing different goods, have different capital-labour ratios. It is this ratio (or proportion) of one factor to another that gives the model its generic name: the Factor Proportions Model.

**Figure 4. *A simulation of influence mobility, advantage level vs. time.***
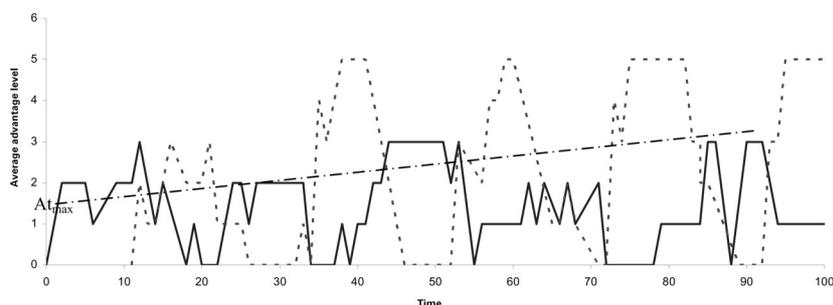


The expected influence mobility effect of both legislated and structural factors could be represented by a simulation of the average advantage level of influence over the total period of time of a legislated trade advantage. In this sense, the mobility of influence of factor is affected by a multitude of other factors not captured in this paper. These include, weather effects, variable organisation difficulties, transport constraints, and political problems, among others. Notice that the effects of the two advantages are imperfect but compensatory (alternating) in the model, though policy implementation allows the factor input advantages to surge above the legislated advantages. The simultaneity in the implementation of policy to build the factor input advantage almost results in a divergence in the two forms of advantages, where the legislated advantages expire and the factor input advantages are strong enough to sustain a higher level of trade when the initiatives are 100 percent (full time) implemented (Figure 4).

**Implications.**

Africa failed to attract durable foreign investment in the manufacturing sector, particularly in the apparel and textile industry, where it had realised major progress under AGOA for two main reasons:

• The all-important 30 percent cost advantage was totally legislated/exogenously-driven and the "third-party provision" under AGOA was phased out in 2007, meaning that to retain duty-free entry to the all-important United States market, AGOA eligible countries and their home-based manufacturers will have to source textile fabric inputs from other African AGOA eligible countries, where prices are higher and quality lower than in Asia, which is currently the main supplier.

• No major initiatives to improve on the low domestic capacity (base knowledge) and competitiveness.

Key needs of foreign investors, such as skills, do not exist. The match of the skills with the national investment objectives has been low (see for instance, Daniels 2007). In the value-addition process, foreign investors must have to submit to human capacity/competitiveness in the countries to exploit niche/privileged markets. The OECD report on Africa Economic Outlook

**Table 5.** *Index of extensive production margins (apparel and textile), select AGOA countries*

|              | 2001  | 2002  | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--------------|-------|-------|------|------|------|------|------|------|
| **Kenya**        | 1.002 | 1.002 | 1.06 | 1.2  | 0.98 | 0.78 | 0.72 | 0.75 |
| **Lesotho**      | 0.97  | 0.98  | 1.05 | 1.2  | 1.08 | 0.7  | 0.68 | 0.69 |
| **Swaziland**    | 1.002 | 1.04  | 1.4  | 1.3  | 1.4  | 0.9  | 0.8  | 0.7  |
| **South Africa** | 1.02  | 1.03  | 1.05 | 1.05 | 1.06 | 1.03 | 1.02 | 1.02 |

*Sources:* Author's, based on limited payroll data for local staff and select foreign companies, and information from Thompson One Analytics (www.thomsononeim.com and solutions.dnb.com) and various supplemental sources. **Note:** Validity of indices was tested through a simple correlation of the indices with growth rates of exports (F.O.B) in a pooled cross-country/time series analysis. The correlation returned a coefficient of determination ($R^2$) of 0.57, and coefficient of the index variable was acceptable, with low error term, and a probability of less than five percent that the coefficients lie outside the test area.

(2008) shows that higher technical and vocational skills are crucial to enhancing Africa's competitiveness, contributing to social inclusion, decent employment and poverty reduction. At around $100 a month, Lesotho's typical salaries are, for instance, at least five times higher than those in Bangladesh, and two to three times higher than those in China.[24] Lack of resources to adequately equip the population for future growth and global competition continues to be a problem in the manufacturing sector.

Indexing the changes to cost advantages due to the GSP initiatives for Africa and the subsequent erosions, using the rules of the mobility models, we obtain the following for the countries of Africa (Table 5). The base year for the initial efficiency changes is 2000, just after the initiatives were adopted, thus forming the ex-ante period of index. The key point for indexing a change in structure of competitiveness is 2006, marking the time the end of MFA is supposed to have noticeable impact on the exports and other factors of the economy.

In a world where competition for exports for medium-tech items such as apparel and textiles is fierce, the indices indicate the change in productive efficiency of local labour force, reflected through real income payments. The economic interpretation of the indices should be viewed with caution, given the paucity of the data used so far in the construction. Data was collected from corporate reports of foreign companies and could be accessed only in these countries, selected from UNCTAD (2008).

In Table 5, it is easy to see a significant variation of the index of margin of trade in four countries that benefited, as well as exported additional products in the form of apparel and textiles to the United States, as a result of AGOA. These countries also attracted significant foreign investment for the production of these products, just immediately after the adoption of the AGOA initiative, granting exports cost advantages. In the three cases involving Kenya, Lesotho, and Swaziland, there were significant upsurges in their export of additional products outside their traditional bases, mainly because

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24. *Source: EIU Viewswire,-* « Africa industry: Looming difficulties for textiles », 20 July 2007.

most of the exports were driven by third party fabric importation by foreign investors. The decline in the exports was very steep in 2006, just after the end of MFA, which took place in 2005.

The most appealing feature of the indices is the common peak of their growth; rising with variations from 2001 up to 2004-2005. All the countries witnessed a sharp decline in 2006. Interpreting this shows a pattern totally in line with the period of legislated/exogenously-driven trade advantages due to the GSP initiatives.

The year 2005 marked the end of MFA, when the apparel and textile exporting African countries lost a large part of their 30-percent cost advantage. By 2006, many foreign companies located in the countries had started closing down their businesses, leading to the decline in the indices. The gradient of the indices were gradual but initially positive in line with establishment/phasing-in of foreign capital and production methods in these countries. As the number of foreign apparel and textile producing companies folded, the indices witnessed a rapid decline, testing new low levels than in 2001.

The new low could be attributed to some crowding out effect because the foreign companies bought into or merged with local companies at the beginning, but the closures involved the domestic and foreign components. This was obvious in Kenya and Lesotho. In South Africa and Swaziland, the declines were less steep for two reasons. One, many foreign companies in Swaziland originated from South Africa; and two, AGOA inspired the establishment of fewer new foreign companies in South Africa because the apparel and textile industry in the country was already competitive.

## 6.    Conclusion

Focusing on GSP trade initiatives instead of increased foreign aid as a means of kick-starting the African economy could be a rewarding approach for the region. But the process has been led exclusively by exogenously-driven advantages. For this to be sustainable, the regional governments cannot afford to ignore local contributions to competitiveness of their margin of exports. Current initiatives had positive impact of the few additional export products from the region. This change was, however, not complemented by domestic capacity build-up (base knowledge) meaning that related exports could not be sustained with the erosion of the exogenously-driven/legislated advantages. Thus, in revising their policies to attract more foreign investment inflows, especially of the kind that will have more spill-over effects (especially to stimulate manufacturing) and extensive margin of exports, African countries may have to pay particular attention in their reform of micro economic factors, matching resources and capacities, particularly human capital and skills, to production needs.

Policies to attract foreign investment from SMEs can also help African countries to diversify investment out of natural resource exploitation. Primarily, the SMEs can give the host African countries the opportunity to learn and also facilitate their early entry into new brand development, given sufficient level of domestic base knowledge. As the trend of changes in technical efficiency show, the initiatives have not been complemented by iterative productive development process focused on local learning from experiences, but rather one that is externally-directed. Africa may boost its factor input competitiveness by simultaneously increasing educational attainment, focus-industry domestic knowledge, and reducing skills/economic policy mismatch to sustain trade growth. This may help with the diversification of the economic activities especially in view of the fact that the process of locating a foreign investment project implies a large number of business consideration that transcend simple market accesses. In essence, relying on the legislated advantages provided by the initiatives might be a recipe for total failure of the GSP agenda.

## 7. Time for a coherent industrial, trade and development strategy:

Apart from the challenges and complexities associated with export-led growth strategy, there are obvious solutions. GSP initiatives will succeed in Africa only where governments create the necessary conditions for private enterprise to prosper, especially in manufacturing. This is very difficult in Africa, where outdated technologies and low domestic base knowledge were major constraints inhibiting industrial development. Trade preferences and other trade-promotion programmes are not going to make much progress unless and until African industries starts to produce the kind of products that consumers want, and at competitive prices.

For future initiatives, countries should also aim to engage in pre-initiative preparatory phase, building the focus-industry skills and organising diffusion of related industry expertise to sustain production and therefore exports in the long run.

There is no single formula for success in the case in these economies, but several Asian economies such as China (including Hong Kong and Taiwan), Japan, and Vietnam for example, have followed a sequenced pattern of openness to trade, boosting production through reforms on light industrial manufacturing and exports. In every case there was an emphasis on raising education standards and appropriate skills levels, and importing and applying technology.

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## Annex

### Annex 1. *Törnqvist index methodology: a simplified version*

This index expresses the changes in productivity related to real wages as a measure of technical efficiency gains and human capital productivity. It can be calculated in a multifactor productivity approach with a ratio for each factor.

Multifactor productivity is the ratio of the output index to a weighted average of input indexes. A Tornqvist formula expresses the change in multifactor productivity as the difference between the rate of change in output and the weighted average of the rates of change in various inputs.

In the index, the factors are represented as follows:

Ln    = the natural logarithm of a variable
A     = multifactor productivity
Q     = output I = combined input
K     = capital input
L     = labor input
M    = intermediate input
$W_k$    = the average share of capital cost in total cost in two adjacent periods
$W_l$    = the average share of labor cost in total cost in two adjacent periods
$W_m$   = the average share of intermediate input cost in total cost in two adjacent periods,

The change in the multifactor productivity is then calculated as:

$$\Delta LnA = Ln\left(\frac{At}{At-1}\right) = Ln\left(\frac{Qt}{Qt-1}\right) - \left[W\kappa\left(Ln\frac{Kt}{Kt-1}\right) + Wt\left(Ln\frac{Lt}{Lt-1}\right) + Wm\left(Ln\frac{Mt}{Mt-1}\right)\right]$$

Or

$$\Delta LnA = Ln\left(\frac{At}{At-1}\right) = Ln\left(\frac{Qt}{Qt-1}\right) = Ln\left(\frac{lt}{lt-1}\right)$$

A multifactor productivity index can be further developed by calculating the antilogs of LnA, chaining up the resulting annual rates of change, and expressing the resulting series as a percentage of a selected base year. Equivalently, the change in the multifactor productivity can be directly expressed as $A_t / A_{t-1} = (Q_t / Q_{t-1}) / (I_t / I_{t-1})$. Again, $A_t / A_{t-1}$ can be chained over time and converted into an index number.

All variables, except for cost shares, are in the form of a constant dollar quantity index. The output quantity index is usually derived by deflating the industry output in current dollars by an appropriate price index when the industry output is a single measure. When an industry produces multiple products and the output measure of each individual product is available, such individual outputs may be deflated separately by more detailed price indexes.

In that case, the total output quantity index can be derived through a Tornqvist aggregation such as:

$$\sum n_j Wi\Delta LnQi$$

where $Q_i$ is the output of the ith product, and $W_i$ is the average share of the ith product in the total output. In this context, the index of labour quality is computed easily by adding the growth rates, taking anti-logs and indexing the resulting series to a base time (hour, month or year). A real change in wage cost/rate approximates a fraction of change in productivity paid to the worker. A crude, simple and gratifying way of understanding the productivity increase that leads to wage increase is that for this to happen, a worker that is already operating at full physical capacity must have acquired additional knowledge (technical skills) either through education or experience. When this starts to happen, it builds into a threshold of the ability to increase productivity and sustain production that has been started.

**Table 1. Sub-Saharan Africa: Leading US imports under the AGOA by HTS item, Annual and year-to-date from Jan-May.**
**AGOA-Eligible Countries only.**
*(Thousands of USD, Customs value)*

| HTS6 | Description | AGOA including GSP provisions 2006 | AGOA including GSP provisions 2007 | AGOA including GSP provisions 2007 YTD | AGOA including GSP provisions 2008 YTD | GSP 2006 | GSP 2007 | GSP 2007 YTD | GSP 2008 YTD |
|---|---|---|---|---|---|---|---|---|---|
| **270900** | PETROLEUM OILS AND OILS FROM BITUMINOUS MINE-RALS, CRUDE | 39,706,133 | 46,241,297 | 17,049,648 | 25,671,278 | 6,821,743 | 7,352,563 | 3,144,525 | 3,381,748 |
| **271019** | PETROLEUM OILS & OILS (NOT LIGHT) FROM BITUMI-NOUS MINERALS OR PREPS NESOI 70%+ BY WT. FROM PETROLEUM OILS OR BITUM. MIN. | 986,775 | 816,746 | 323,687 | 383,581 | 115,604 | 128,967 | 36,373 | 81,971 |
| **271011** | LIGHT OILS AND PREPARA-TIONS FROM PETROLEUM OILS & OILS FROM BITUMI-NOUS MIN. OR PREPS 70%+ BY WT. FROM PETRO. OILS OR BITUM. MIN. | 386,791 | 614,116 | 174,107 | 353,367 | 3,269 | 23,031 | 0 | 0 |
| **870323** | PASSENGER MOTOR VEHI-CLES WITH SPARK-IGNITION INTERNAL COMBUSTION RECIPROCATING PISTON ENGINE, CYLINDER CAPACITY OVER 1,500 CC BUT NOT OVER 3,000 CC | 328,807 | 438,489 | 177,189 | 638,932 | 0 | 0 | 0 | 0 |

**Table 1. Sub-Saharan Africa: Leading US imports under the AGOA by HTS item, Annual and year-to-date from Jan-May. AGOA-Eligible Countries only. (Thousands of USD, Customs value) (continued)**

| HTS6 | Description | AGOA including GSP provisions 2006 | AGOA including GSP provisions 2007 | AGOA including GSP provisions 2007 YTD | AGOA including GSP provisions 2008 YTD | GSP 2006 | GSP 2007 | GSP 2007 YTD | GSP 2008 YTD |
|---|---|---|---|---|---|---|---|---|---|
| 620462 | WOMEN'S OR GIRLS' TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS OF COTTON, NOT KNITTED OR CROCHETED | 267,699 | 254,491 | 94,380 | 84,984 | 0 | 0 | 0 | 0 |
| 611020 | SWEATERS, PULLOVERS, SWEATSHIRTS, VESTS AND SIMILAR ARTICLES OF COTTON, KNITTED OR CROCHETED | 227,548 | 225,375 | 80,041 | 55,398 | 0 | 0 | 0 | 0 |
| 620342 | MEN'S OR BOYS' TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS OF COTTON, NOT KNITTED OR CROCHETED | 227,000 | 201,337 | 83,795 | 59,092 | 0 | 0 | 0 | 0 |
| 720230 | FERROSILICON MANGANESE | 114,606 | 180,436 | 52,813 | 94,565 | 114,606 | 180,436 | 52,813 | 94,565 |
| 720241 | FERROCHROMIUM, CONTAINING MORE THAN 4% (WT.) CARBON | 112,663 | 177,911 | 70,619 | 105,597 | 112,663 | 177,911 | 70,619 | 105,597 |

**Table 1. Sub-Saharan Africa: Leading US imports under the AGOA by HTS item, Annual and year-to-date from Jan-May. AGOA-Eligible Countries only.**
*(Thousands of USD, Customs value) (continued)*

| HTS6 | Description | AGOA including GSP provisions 2006 | AGOA including GSP provisions 2007 | AGOA including GSP provisions 2007 YTD | AGOA including GSP provisions 2008 YTD | GSP 2006 | GSP 2007 | GSP 2007 YTD | GSP 2008 YTD |
|---|---|---|---|---|---|---|---|---|---|
| 760612 | ALUMINUM ALLOY RECTAN-GULAR (INCLUDING SQUARE) PLATES, SHEETS AND STRIP, OVER 0.2 MM THICK | 167,532 | 158,589 | 69,270 | 62,443 | 167,532 | 158,589 | 69,270 | 62,443 |
| 720211 | FERROMANGANESE, CONTAI-NING MORE THAN 2% (WT.) CARBON | 97,833 | 149,736 | 53,273 | 143,856 | 0 | 0 | 0 | 0 |
| 620520 | MEN'S OR BOYS' SHIRTS OF COTTON, NOT KNITTED OR CROCHETED | 64,871 | 80,063 | 27,022 | 28,111 | 0 | 0 | 0 | 0 |
| 610462 | WOMEN'S OR GIRLS' TROU-SERS, BIB AND BRACE OVE-RALLS, BREECHES AND SHORTS OF COTTON, KNIT-TED OR CROCHETED | 57,456 | 71,019 | 35,317 | 21,919 | 0 | 0 | 0 | 0 |
| 610510 | MEN'S OR BOYS' SHIRTS OF COTTON, KNITTED OR CRO-CHETED | 49,017 | 65,835 | 34,215 | 29,566 | 0 | 0 | 0 | 0 |

**Table 1. Sub-Saharan Africa: Leading US imports under the AGOA by HTS item, Annual and year-to-date from Jan-May. AGOA-Eligible Countries only.**
*(Thousands of USD, Customs value) (continued)*

| HTS6 | Description | AGOA including GSP provisions 2006 | AGOA including GSP provisions 2007 | AGOA including GSP provisions 2007 YTD | AGOA including GSP provisions 2008 YTD | GSP 2006 | GSP 2007 | GSP 2007 YTD | GSP 2008 YTD |
|---|---|---|---|---|---|---|---|---|---|
| 611030 | SWEATERS, PULLOVERS, SWEATSHIRTS, VESTS AND SIMILAR ARTICLES OF MAN-MADE FIBERS, KNITTED OR CROCHETED | 66,512 | 65,772 | 23,951 | 23,808 | 0 | 0 | 0 | 0 |
| 280469 | SILICON, CONTAINING BY WEIGHT LESS THAN 99.99% OF SILICON | 59,845 | 65,359 | 26,808 | 45,204 | 59,845 | 65,359 | 26,808 | 45,204 |
| 711319 | JEWELRY AND PARTS THE-REOF, OF PRECIOUS METAL OTHER THAN SILVER | 76,432 | 57,684 | 28,628 | 14,217 | 76,432 | 57,684 | 28,628 | 14,217 |
| 610910 | T-SHIRTS, SINGLETS, TANK TOPS AND SIMILAR GAR-MENTS OF COTTON, KNIT-TED OR CROCHETED | 51,366 | 50,447 | 22,607 | 20,127 | 0 | 0 | 0 | 0 |
| 382370 | INDUSTRIAL FATTY ALCO-HOLS | 46,091 | 48,118 | 14,449 | 20,819 | 0 | 0 | 0 | 0 |
| 720219 | FERROMANGANESE, CONTAI-NING 2% (WT.) OR LESS CAR-BON | 32,169 | 38,909 | 16,145 | 35,635 | 32,169 | 38,909 | 16,145 | 35,635 |
| 80510 | ORANGES, FRESH | 46,171 | 37,794 | 0 | 0 | 0 | 0 | 0 | 0 |
| 284990 | CARBIDES, NESOI, WHETHER OR NOT CHEMICALLY DEFI-NED | 30,701 | 37,082 | 18,447 | 24,401 | 30,701 | 36,974 | 18,339 | 24,401 |

**Table 1. Sub-Saharan Africa: Leading US imports under the AGOA by HTS item, Annual and year-to-date from Jan-May. AGOA-Eligible Countries only.**
*(Thousands of USD, Customs value) (continued)*

| HTS6 | Description | AGOA including GSP provisions 2006 | AGOA including GSP provisions 2007 | AGOA including GSP provisions 2007 YTD | AGOA including GSP provisions 2008 YTD | GSP 2006 | GSP 2007 | GSP 2007 YTD | GSP 2008 YTD |
|---|---|---|---|---|---|---|---|---|---|
| 240120 | TOBACCO, PARTLY OR WHOLLY STEMMED/STRIPPED | 36,774 | 35,169 | 23,793 | 7,509 | 26,247 | 28,062 | 18,513 | 2,438 |
| 220421 | WINE OF FRESH GRAPES (OTHER THAN SPARKLING WINE) AND GRAPE MUST WITH FERMENTATION PREVENTED, ETC. BY ADDING ALCOHOL, CONTAINERS OF NOT OVER 2 LITERS | 32,948 | 34,875 | 13,009 | 11,929 | 5,481 | 6,468 | 2,398 | 2,601 |
| 610610 | WOMEN'S OR GIRLS' BLOUSES AND SHIRTS OF COTTON, KNITTED OR CROCHETED | 23,377 | 29,190 | 9,705 | 6,812 | 0 | 0 | 0 | 0 |
| 220710 | ETHYL ALCOHOL, UNDENATURED, OF AN ALCOHOLIC STRENGTH BY VOLUME OF 80% VOL. OR HIGHER | 29,228 | 25,952 | 12,992 | 10,935 | 0 | 0 | 0 | 0 |
| 411390 | LEATHER OF ANIMALS NESOI, WITHOUT HAIR ON, FURTHER PREPARED AFTER TANNING OR CRUSTING, OTHER THAN LEATHER OF HEADING 4114 | 23,733 | 24,832 | 11,148 | 7,856 | 23,546 | 24,522 | 11,109 | 7,752 |

**Table 1. Sub-Saharan Africa: Leading US imports under the AGOA by HTS item, Annual and year-to-date from Jan-May.**
**AGOA-Eligible Countries only.**
**(Thousands of USD, Customs value) (continued)**

| HTS6 | Description | AGOA including GSP provisions 2006 | AGOA including GSP provisions 2007 | AGOA including GSP provisions 2007 YTD | AGOA including GSP provisions 2008 YTD | GSP 2006 | GSP 2007 | GSP 2007 YTD | GSP 2008 YTD |
|---|---|---|---|---|---|---|---|---|---|
| 620463 | WOMEN'S OR GIRLS' TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS OF SYNTHETIC FIBERS, NOT KNITTED OR CROCHETED | 16,836 | 23,781 | 10,412 | 10,107 | 0 | 0 | 0 | 0 |
| 610463 | WOMEN'S OR GIRLS' TROUSERS, BIB AND BRACE OVERALLS, BREECHES AND SHORTS OF SYNTHETIC FIBERS, KNITTED OR CROCHETED | 30,448 | 23,516 | 7,808 | 3,169 | 0 | 0 | 0 | 0 |
| | **Subtotal** | 43,397,361 | 50,273,918 | 18,565,279 | 27,975,217 | 7,589,836 | 8,279,475 | 3,495,540 | 3,858,571 |
| | **All Other** | 841,832 | 777,465 | 291,184 | 350,441 | 516,367 | 502,260 | 186,015 | 179,382 |
| | **TOTAL** | 44,239,193 | 51,051,383 | 18,856,463 | 28,325,658 | 8,106,203 | 8,781,735 | 3,681,555 | 4,037,954 |

*Note*: Because of rounding, figures may not add to the totals shown.
*Source*: Compiled by the U.S. International Trade Commission from official statistics of the US Department of Commerce (reportweb.usitc.gov/africa/trade_data.html)

**Table 2. Sub-Saharan Africa: US imports, GSP imports, and AGOA imports, by major commodity sectors, annual and year to date, Jan-Mar. Value (1,000 USD)**

| Sector | 2005 | 2006 | 2007 | 2007 YTD | 2008 YTD |
|---|---|---|---|---|---|
| **Agricultural products:** | | | | | |
| Imports | 1,333,629 | 1,285,251 | 1,156,902 | 366,080 | 453,220 |
| AGOA including GSP provisions of the AGOA | 272,075 | 360,803 | 271,538 | 56,796 | 49,475 |
| GSP imports | 150,954 | 174,141 | 145,857 | 34,361 | 24,133 |
| Duty-free items added for AGOA cts. | 151,724 | 224,841 | 154,871 | 27,927 | 30,296 |
| **Forest products:** | | | | | |
| Imports | 191,078 | 166,056 | 182,816 | 40,557 | 45,463 |
| AGOA including GSP provisions of the AGOA | 32,232 | 14,443 | 11,562 | 2,615 | 1,820 |
| GSP imports | 34,043 | 15,635 | 12,284 | 2,761 | 1,870 |
| Duty-free items added for AGOA cts. | 166 | 73 | 44 | 4 | 27 |
| **Chemicals and related products:** | | | | | |
| Imports | 875,360 | 778,097 | 991,625 | 211,563 | 389,111 |
| AGOA including GSP provisions of the AGOA | 329,282 | 284,739 | 308,885 | 66,702 | 98,157 |
| GSP imports | 429,114 | 317,706 | 377,104 | 58,402 | 143,397 |
| Duty-free items added for AGOA cts. | 44,708 | 48,086 | 51,800 | 8,300 | 12,271 |
| **Energy-related products:** | | | | | |
| Imports | 40,327,190 | 47,814,479 | 54,238,452 | 11,391,471 | 17,217,071 |
| AGOA including GSP provisions of the AGOA | 35,207,962 | 41,081,606 | 47,674,569 | 10,137,366 | 14,978,246 |
| GSP imports | 5,641,308 | 8,450,722 | 8,699,481 | 1,975,119 | 2,366,332 |
| Duty-free items added for AGOA cts. | 30,909,638 | 34,139,083 | 40,167,597 | 8,481,228 | 13,056,252 |

**Table 2. Sub-Saharan Africa: US imports, GSP imports, and AGOA imports, by major commodity sectors, annual and year to date, Jan-Mar. Value (1,000 USD) (continued)**

| Sector | 2005 | 2006 | 2007 | 2007 YTD | 2008 YTD |
|---|---|---|---|---|---|
| **Textiles and apparel:** | | | | | |
| Imports | 1,504,188 | 1,338,875 | 1,333,860 | 320,965 | 265,802 |
| AGOA including GSP provisions of the AGOA | 1,424,939 | 1,261,128 | 1,270,589 | 306,907 | 253,634 |
| GSP imports | 6,106 | 5,100 | 3,267 | 623 | 270 |
| Duty-free items added for AGOA cts. | 1,418,986 | 1,256,394 | 1,267,420 | 306,332 | 253,364 |
| **Footwear:** | | | | | |
| Imports | 2,552 | 4,334 | 5,358 | 1,864 | 972 |
| AGOA including GSP provisions of the AGOA | 1,909 | 2,487 | 2,175 | 1,536 | 517 |
| GSP imports | 0 | 0 | 0 | 0 | 0 |
| Duty-free items added for AGOA cts. | 1,909 | 2,487 | 2,175 | 1,536 | 517 |
| **Minerals and metals:** | | | | | |
| Imports | 4,565,442 | 5,960,938 | 7,390,962 | 1,715,808 | 1,961,815 |
| AGOA including GSP provisions of the AGOA | 493,881 | 596,337 | 796,266 | 139,940 | 285,619 |
| GSP imports | 468,163 | 536,586 | 667,186 | 125,422 | 221,005 |
| Duty-free items added for AGOA cts. | 73,604 | 103,770 | 153,247 | 20,229 | 75,918 |
| **Machinery:** | | | | | |
| Imports | 273,226 | 314,898 | 423,496 | 99,739 | 77,764 |
| AGOA including GSP provisions of the AGOA | 19,300 | 27,874 | 29,331 | 5,793 | 4,665 |
| GSP imports | 18,979 | 27,660 | 29,361 | 5,796 | 4,665 |
| Duty-free items added for AGOA cts. | 337 | 216 | 10 | 0 | 0 |

**Table 2. Sub-Saharan Africa: US imports, GSP imports, and AGOA imports, by major commodity sectors, annual and year to date, Jan-Mar. Value (1,000 USD) (continued)**

| Sector | 2005 | 2006 | 2007 | 2007 YTD | 2008 YTD |
|---|---|---|---|---|---|
| **Transportation equipment:** | | | | | |
| Imports | 391,093 | 588,482 | 669,035 | 169,946 | 427,045 |
| AGOA including GSP provisions of the AGOA | 273,632 | 495,315 | 588,548 | 150,559 | 383,021 |
| GSP imports | 135,490 | 140,584 | 121,078 | 29,771 | 21,910 |
| Duty-free items added for AGOA cts. | 138,142 | 354,730 | 467,470 | 120,788 | 361,111 |
| **Electronic products:** | | | | | |
| Imports | 76,069 | 85,149 | 93,611 | 19,295 | 22,535 |
| AGOA including GSP provisions of the AGOA | 19,188 | 16,427 | 21,324 | 3,669 | 3,275 |
| GSP imports | 19,145 | 16,438 | 21,256 | 3,669 | 3,274 |
| Duty-free items added for AGOA cts. | 70 | 0 | 71 | 0 | 1 |
| **Miscellaneous manufactures:** | | | | | |
| Imports | 132,291 | 185,276 | 182,838 | 48,207 | 25,274 |
| AGOA including GSP provisions of the AGOA | 71,995 | 98,033 | 76,596 | 20,777 | 10,992 |
| GSP imports | 71,499 | 98,687 | 74,322 | 20,834 | 10,371 |
| Duty-free items added for AGOA cts. | 3,791 | 3,309 | 4,943 | 792 | 906 |
| **Special provisions:** | | | | | |
| Imports | 252,385 | 240,186 | 219,603 | 40,218 | 82,568 |
| AGOA including GSP provisions of the AGOA | 0 | 0 | 0 | 0 | 0 |
| GSP imports | 0 | 0 | 0 | 0 | 0 |
| Duty-free items added for AGOA cts. | 0 | 0 | 0 | 0 | 0 |
| **All sectors:** | | | | | |
| Imports | 49,924,502 | 58,762,021 | 66,888,558 | 14,425,712 | 20,968,640 |
| AGOA Including GSP provisions of the AGOA | 38,146,396 | 44,239,193 | 51,051,383 | 10,892,660 | 16,069,422 |
| GSP imports | 6,974,802 | 9,783,261 | 10,151,197 | 2,256,758 | 2,797,228 |
| Duty-free items added for AGOA cts. | 32,743,077 | 36,132,990 | 42,269,649 | 8,967,136 | 13,790,663 |

*Source:* Compiled from official statistics of the US Department of Commerce.