Staff Paper

Has AGOA Increased Agricultural Exports from Sub-Saharan Africa to the United States?

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ABSTRACT

The African Growth Opportunity Act (AGOA) provides preferential access to Africa's products in US markets. While proponents expect that AGOA will expand Africa's exports to the US, opponents argue that such increases are unlikely, particularly regarding agricultural exports. This paper offers new empirical evidence that is inconclusive regarding the impact of AGOA on African exports to the US.

(25 pages, including Appendix)

Has AGOA Increased Agricultural Exports from Sub-Saharan Africa to the United States?

The African Growth and Opportunity Act (AGOA), which was signed into United States (US) law in May 2000, offers preferential access to Sub-Saharan Africa's (SSA) products in US markets. In return, beneficiary countries are committed to improve their economic policy environment, participate more actively in the globalization process, promote political and economic stability, and foster human and workers' rights in Africa (Mattoo, Roy and Subramanian, 2002). The idea of creating a new form of trade preferences exclusively for SSA, in addition to already existing Generalized Systems of Preferences (GSP), drew both support and opposition from a wide range of actors. Pointing to the marginal place of SSA in the global markets for goods, services and investments, supporters have argued that AGOA would expand African exports to US, increase foreign direct investment, and create new employment opportunities in SSA.

AGOA also faced severe criticisms, especially from international anti-globalization movements and US interest groups. In the US, textile lobby groups and labor unions were primarily concerned that removal of trade barriers on textile and apparels would result in massive loss of jobs (Cooper, 2002; Friedman, 2000a; 2000b). Recently, US fruit growers urged the administration to re-impose a 15.3% import duty on canned pears, claiming that AGOA gave South African pear farmers an unfair advantage over US farmers (Poole, 2002). Opponents have also charged that AGOA benefits will remain essentially illusory for most countries in SSA (Blackman and Mutume, 1998; Mutume, 1998; Raghavan, 2000). Though largely unsubstantiated, several limitations of the current SSA-US trade relationship implicitly support the latter criticism, at least in the short run. First, not only are the SSA's exports to US dominated

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by oils products, they are also highly concentrated in a few countries. Second, US trade policies, along with trade policies in other OECD countries, generally give a mixed signal to trading partners (Linsey, 2002). In particular, agricultural subsidies, tariff and non-tariff barriers in OECD countries contribute for most of the price distortions in the world agricultural markets (Nouve et al., 2002).

Even with these limitations, preferential trade opportunities would generally tend to have a positive effect on total exports from developing countries (Cheng and Wall, 1999; Rose, 2002; IMF and The World Bank, 2001; 2002). However, their impacts on agricultural exports are less clear, primarily due to high distortions in the world's agricultural trading system. For example, SSA's share in the European agricultural markets has declined, despite nearly three decades of trade preferences extended to SSA under several ACP-EC agreements (Mattoo, Roy and Subramanian, 2002; Rose, 2002). Yet, almost every development strategy in SSA recognizes the central role of agriculture in stimulating an export-led growth. This raises an important question: How have SSA's agricultural exports to US responded to the trade opportunities offered under AGOA? The very few studies that have evaluated the AGOA initiative, such as Mattoo, Roy and Subramanian (2002), have not addressed this specific question. This study, therefore, attempts to fill the gap, using panel data regression techniques to isolate the ceteris paribus effects of AGOA on SSA's agricultural exports.

The paper is organized as follows. The next section presents a synopsis on AGOA for readers who are not familiar with the legislation. The synopsis outlines the conditions for eligibility and discusses some key features of the potential benefits of AGOA. Section III presents the theoretical model based on the gravity trade equation, and Section IV discusses the empirical model and highlights important characteristics of the data. Results are presented and

discussed in Section V. The last section concludes that AGOA may have contributed to expand

agricultural exports from Africa to the United States, albeit, only marginally.

2. A Synopsis on AGOA[1]

Readers familiar with AGOA may skip this section and go directly to the methodology in

Section III.

What Is AGOA?

The African Growth and Opportunity Act (AGOA) is a US law that was signed in May

2000, and renewed in August 2002 under the AGOA II legislation. AGOA offers preferential

access to Sub-Saharan Africa's products into US markets. In turn, beneficiary countries are

required to commit themselves to improve their economic policy environment, participate more

actively in the globalization process, promote political and economic stability, and foster human

and workers' rights their countries.

What Countries Are Eligible?

In December 2002, there were 38 countries that were declared AGOA eligible. To be

eligible for AGOA benefits, countries must commit themselves to (or make continual progress

towards) establishing institutional environments that are conducive to the US-Africa trade. The

conditions include: (i) commitment to a market-based economy; (ii) practice of rule of law and

political pluralism; (iii) elimination of barriers to U.S. trade and investment; (iv) protection of

intellectual property; (v) making efforts to combat corruption; (vi) adopting policies to reduce

poverty, increasing availability of health care and educational opportunities; (vii) protection of

human rights and workers' rights; (viii) and elimination of certain forms of child labor. Although

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[1] Details information is available online at www.agoa.gov. Only some key features of the agreement are highlighted
in this section.

it is not expected that beneficiary countries will fully satisfy all these conditionalities, eligible

countries must be committed to, and continue to make progress in regards to these reforms. The

US President determines what countries are eligible.

Besides the above conditions, it is required that a country be eligible for the General

System of Preferences (GSP) before being AGOA eligible. Furthermore, GSP eligibility does not

necessarily imply AGOA eligibility. Though 45 of the 48 Sub-Saharan African countries were

GSP eligible by December 2002, 7 of these 45 are not yet AGOA eligible. Thus, currently there

are 10 SSA countries that are not AGOA eligible[2].

What Are the Benefits?

Under the initial AGOA legislation, beneficiary African counties were granted duty-free

access for more than 1,800 tariff line products. This was in addition to the standard GSP list of

approximately 4,600 products available to other GSP beneficiary countries outside Africa.

However, these additional GSP eligible products did not include items such as footwear,

luggage, handbags, watches, and flatware. In general, preferential access opportunities for SSA

exports to US were expanded under AGOA II. But, an article can only benefit from the GSP

duty-free treatment after official determination (by the US Trade Representative and the US

International Trade Commission) that the product is not import sensitive when it is of an African

origin. In essence, the GSP gives African exporters a 5% preference margin over the average

Most Favored Nation (MFN) tariff rate (Mattoo, Roy and Subramanian, 2002). These authors

also suggest that GSP covered about 17% of African exports, which could increase to 72% as a

result of AGOA.

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[2] The seven countries that are not AGOA eligible are: Angola, Burkina Faso, Burundi, Equatorial Guinea, Liberia, Togo, and Zimbabwe. Comoros, Sudan and Somalia are the three countries that are, in addition, not GSP eligible, and thus are also AGOA ineligible.

AGOA offers two additional advantages in regards to GSP provisions. First, while the GSP provisions are scheduled to expire in 2006 for other beneficiary countries, AGOA eligible countries are granted a 2-years extension of these provisions (until September 2008). Second, GSP benefits are capped in other beneficiary countries outside SSA, but are not subject to ceiling in AGOA beneficiary countries.

Textile and Apparel: A Special Rule

A special rule applies to trade in apparel. This provides for a duty-free and a quota-free access to SSA's textile products made from US fabrics, yarns and threads, following what has been called the "triple transformation rule" (see for example, Gibbon, 2002). Beneficiary countries may also source intermediary materials within eligible African countries. But exports based on regional materials should not, under AGOA II (which doubled the initial figures), exceed 3% of the total apparel imports into the US. This cap will increase up to 7% of the overall US apparel imports over a period of 8 years. In addition, the lesser developed beneficiary countries[3] are eligible for the Special Rule, which authorizes them to source materials from all over the world until September 2004. Imports based on these materials may benefit from the duty-free treatment, although they are subject to the cap imposed on imports based on non-US materials. Note however that, countries can benefit from the apparel preferential treatment only after establishing an effective visa system that can detect illegal transshipments and counterfeits and enforce verification procedures.

The specific, or even restrictive, rules of origin imposed on AGOA apparels imports are often one of the main sources of criticism of the initiative. Critics often argue that AGOA only permits apparels manufactured using US fabrics, yarns and threads. This criticism is not entirely

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[3] The lesser developed beneficiary countries (LDBC) are defined as countries with a per capita income less than $1,500 in 1998. AGOA II granted LDBC status to Namibia and Botswana. By the end of 2002, there were 33 countries beneficiary of the Special Rule provisions.

correct, as there are cases (besides the special rule provisions) where African countries have the opportunity to export non-US based apparels to the US (for details, see www.agoa.gov). There is, nevertheless, little doubt that these restrictive rules of origin reduce the scope of the AGOA preferential initiatives. For instance, Mattoo, Roy and Subramanian (2002) review the apparel provisions of AGOA and conclude that over the medium term, the initiative will expand Africa's possibility to export its products to the US by US$100 to $140 million, corresponding to 8% to 11% increase in African non-oil exports. Nonetheless, they also contend that the benefits would have been nearly five times greater, about US$540 million, were the terms of the preferential market access free of restrictive rules, in particular the rule of origin. One may be interested in knowing how much the contribution is, if any, of agricultural exports to the increases in non-oil exports. This is the central objective of this paper and we will devote the next section to laying out the theoretical framework used to address this question. In the sub-section that follows we discuss a few other noteworthy characteristics of the SSA-US trade relationship.

Small Preference Margins on Oil and Tariff Peaks on Non-Oil exports

Data from Mattoo, Roy and Subramanian (2002) suggest that the US's share of SSA's total exports is much larger (about 23%) than its share of non-oil exports, estimated to be about 7.4%. It follows that oil is a major component of SSA-US trade. Petroleum products constitute a large share of the increase in commodity coverage under AGOA II. The pre-AGOA average tariffs on oil products was 1.5%, and the removal of these tariffs would increase prices by about 1%, which will not yield significant benefits for major oil exporters, including Nigeria, Angola and Gabon. However, an official report on AGOA (US Department of Commerce, 2002) indicates that the legislation permitted 8.2 billions duty-free imports from SSA, including AGOA preference. The report, however, recognizes a concentration at more than 92% of these benefits

in three countries (Nigeria, South Africa and Gabon), with Nigeria alone receiving 5.7 billions (about 70%).

In their study, Mattoo, Roy and Subramanian also indicate that AGOA's benefits are likely to come from two groups of non-oil exports: apparels and non-apparels such as footwear and agricultural products. Some non-apparel exports are subject to tariff rate quotas with high out-of quotas tariff rates as high as 350% on tobacco, 164% on peanuts, 132% on Brazilian nuts and 26% on beef. The study finally indicates that 1067 tariff lines are not covered by AGOA preferences. Of these, 174 lines face an average tariff rate of 2.5% and the remaining 893 lines face on average a tariff of 11%. These rates remain, however, below the average tariffs in SSA (for details, see WTO, 2001).

3. The Gravity Trade Model

This paper uses a gravity trade model to characterize the marginal impact of AGOA on African agricultural exports to US. The analysis is restricted to one-way bilateral trade from African countries to US, which is enough to answer the question regarding whether AGOA has increased agricultural exports from SSA to the US.

The gravity trade model was developed in the 1960s. It has been used in pioneering works by Tinbergen (1962) and Pöynöhen (1963). The model, which is widely known for its empirical robustness[4], is based on a simple and intuitive rationale. It postulates that the volume of trade between two countries is proportional to their economic sizes (capacity to supply exports and to absorb imports) and inversely proportional to costs of trading. The distance between the two trading units has traditionally served as a proxy for trading costs (Lairds and Yeats, 1990).

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[4] The empirical robustness is often taken, according to Wang (1999), to mean high R-squared.

Besides their empirical robustness, gravity trade models also have strong theoretical foundations both in traditional and in the new trade theories (Wall, 1999; Cheng and Wall, 1999; Rose 2002; Evenett and Keller, 2002). The lack of rigorous theoretical underpinning has traditionally been the major criticism against gravity trade models. However, Wall (1999) indicates that such criticism has been weakened since Deardorff (1998) established a consistency between gravity models and variants of traditional trade theories, such as the Ricardian and Heckschser-Ohlin models. Wall (1999) also points to "earlier works by Anderson (1979) and Bergstrand (1985) who derived gravity equations from trade models with product differentiation and increasing returns to scale" (Wall, 1999; p. 35), suggesting that gravity models may also be consistent with the new trade theory pioneered by, among others, Paul Krugman, Elhanan Helpman and Gene Grossman.

Although theoretical foundations have been established, the empirical application of the gravity model may lead to weak results in the presence of heterogeneities. Cheng and Wall (1999) show that with such heterogeneities, gravity models tend to underestimate the regression coefficients between high-volume traders, while overestimating them between low-volume traders. The SSA-US trade relationship is a potential candidate of these heterogeneity biases, as the composition, volume, as well as unobservable institutional or geopolitical components of these exchanges vary widely from one African country to the other. One way to control for countries' heterogeneity is to impose a fixed-effects structure on the unobserved country-specific effects (Wall, 1999). Thus, the methodological framework used in this study is based on a modified version of what Cheng and Wall (1999) called a fixed-effects gravity trade equation. The modification is an augmentation that incorporates several characteristics of the AGOA legislation. The model can be represented as follows:

$$X_{it} = \alpha_0 + \alpha_t + \alpha_i + \boldsymbol{\beta_{it}}\mathbf{Z}_{it} + \boldsymbol{\gamma_{it}}\mathbf{W_{it}} + \varepsilon_{it}, \qquad i = 1, 2, ..., N \text{ and } t = 1, 2, ..., T. \qquad (1)$$

where X_{it} represents agricultural exports from SSA country i to the US in period t. There are

three intercept terms: (i) α_0 is common to all countries and all periods; (ii) α_t is common to all

countries, but specific to each period; and (iii) α_i, which captures countries' heterogeneity, is

common to all periods, but specific to each country. $\mathbf{Z}_{it}$ is a vector of conventional gravity model

variables such as income, population, and distance. $\mathbf{W_{it}}$ is vector of dichotomous variables

accounting for different features of AGOA (eligibility and apparel visa). Each of these dummy

variables is hypothesized to have a positive impact on agricultural exports from SSA to US.

Finally, ε_{it} represents the idiosyncratic errors that are assumed, as discussed in Wooldridge

(2002, Chapter 10), to be serially uncorrelated with zero mean and constant variance across time.

4. Empirical Method and Data

Variables and Data Source

The empirical model is directly based on Equation (1). The dependent variable X_{it} is denoted as

AGX_{it}, representing to quarterly agricultural exports from SSA country i to the US in period t.

The data on the one-way SSA-US bilateral trade is from the US International Trade Commission

(USITC) database. The total exports from SSA to US (or equivalently the US imports for

consumption from SSA) are disaggregated into agricultural (AGX_{it}) and non-agricultural

exports[5].

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[5] It is not clear whether the agricultural exports, as presented in the USITC database, included or not textile products. This is because the USITC presented the data as agricultural and non-agricultural exports, with no further details on the components of these categories. Preliminary checks, however, suggest that textile products (mainly from Section XI, Chapter 50-63, of the Harmonized Tariff Schedule of the US) are unlikely to be included in the

The vector $\mathbf{Z}_{it}$ is formed by four standard gravity variables: gross domestic product in SSA country i (GDP_{it}), in the United States (GDP_{jt}), population in SSA country i (N_{it}) and US population (N_{jt}). The US GDP data were obtained from the Bureau of Economic Analysis of the US Department of Commerce (USDOC-BEA, 2003) while the GDP values for SSA were obtained from the World Economic Outlook (WEO) database (September 2002) of the International Monetary Fund (IMF, 2002). While US GDP is available on a quarterly basis, it was necessary to "quarterize" the SSA data. For this purpose, we assume a uniform distribution of production across the year, which makes the quarterly figures one-fourth of the annual data. The population data were obtained from FAOSTAT, statistical database of the Food and Agriculture Organization of United Nations (FAO, 2003). The quarterly observations are obtained by assuming that the population grows continuously and that observed data points correspond to the fourth quarter in each year. The last three quarters in a given year are filled by adding incrementally, one-fourth of the population increase between that year and the previous year[6]. The distance between SSA countries and US is another standard variable in gravity equations, but it is irrelevant in our model, which is based on a fixed effects treatment of the unobserved effects. Fixed effects treatment calls for time-demeaning of the data and this will drop all time-invariant variables out of the gravity equation, including the unobserved effects α_i (Equation (1)).

The vector $\mathbf{W}_{it}$ has two dummy variables: $AGOA_{it}$, which captures whether and when a given country was declared AGOA-eligible; and $VISA_{it}$, which indicates whether and when the

agricultural exports. Nevertheless, it will be useful if the USITC provides details on the commodities included in the computation of the agricultural exports. For the purpose of this study, AGOA has some clear benefits for the textile sector in SSA, and these are not considered in the dependent variable of the model, assuming that textiles are excluded from the USITC definition of the US agricultural imports.

[6] For example, if a and b correspond to the annual populations in 1998 and 1999, respectively, a corresponds to 1998:4 and b to 1999:4. Let $c = (b - a)/4$, the population in the first quarter of 1998 (1998:1) is $(a + c)$; in the second and third quarters, the populations are $(a + 2c)$ and $(a + 3c)$, respectively; the fourth quarter's population is $(a + 4c)$, which is simply b.

eligible country has a visa system for apparel exports. These dummies take a value equal to one if eligibility or qualification for the visa system is granted before the middle of a given quarter. Otherwise, they are assigned a zero value. They are constructed based on public information available with the USITC. Both of these variables are hypothesized to have a positive marginal effect on agricultural exports[7]. Finally, the intercepts α_t were constructed on a yearly basis, instead of being quarterly dummies. This approach is adopted in order to save on the degrees of freedom. Thus, we have four country-invariant time dummies, *d99*, *d00*, *d01* and *d02* corresponding, respectively, to the four years from 1999 to 2002.

Key Features of the Data

The share of agriculture in total exports from SSA to the United States varies widely from 0% for relatively large oil exporters, such as Angola and Gabon, to more than 95% in countries such as Liberia (Table 1). On average, agricultural exports form a very small fraction of SSA's total exports to US (about 5% between1998 and 2000 and one percentage point lower over the period 2001-2002). Agricultural exports in relatively high performing economies, including South Africa and Mauritius, form less than 5% of the total exports to the United States (See Table 1 for details). Despite the small share of agriculture in the South African total exports, the country remains the second largest exporter of agricultural products from SSA to US, besides Côte d'Ivoire, which accounts for at least one-third of these exports. Other major agricultural exporters include Malawi, Ghana, Kenya, and particularly Madagascar, which has increased its agricultural market share from about 4% in 1998-2000 to 11% in 2001 and nearly 19% over the first three quarters of 2002 (Table 2). More than three-quarters of Côte d'Ivoire's exports to US were made of agricultural products during the period 1998-2000. This figure decreased to about

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[7] Even if, as discussed in footnote No. 6, textiles are unlikely to be part of the agricultural export figures, participation into the textiles market is likely to be accompanied by wider participation in the agricultural markets, implying that the apparel visa would be positively related to agricultural exports.

half over the subsequent two years, and this decline may be partly due to the armed conflict that erupted in late 2002 in that country.

Regarding non-agricultural exports, more than 85% of them are concentrated in four countries, namely Nigeria, South Africa, Angola and Gabon. Except South Africa, which presents high export diversification, the remaining three major non-agricultural exporters are oil-rich countries (Table 3).

Estimation

Once the variables have been defined, the estimation strategy is straightforward. We use STATA software for our estimation. The regression is run over three sub-samples of countries: (i) a full sample of the 46 countries; (ii) a sample of 27 countries with quarterly agricultural exports greater or equal to $100,000 on the average for the post-AGOA period; and (iii) a sample of the 8 major agricultural exporters, as indicated in Table 2[8]. Due to the economic power of South Africa, we also test the sensitivity of these results by running the three separate regressions with South Africa excluded from the sample. Results are discussed in the next section.

5. Results and Discussion

Results indicate that AGOA may have contributed to an average of $376,000 additional (quarterly) increase in agricultural export earnings for an average SSA beneficiary country. This figure increases to slightly less than $0.5 million when South Africa is excluded from the sample of the 46 countries (Table 4). When the sample of the 27 countries (with average agricultural exports exceeding $100,000 in the post-AGOA period) is used, the marginal contribution of AGOA to expansion in the agricultural exports is even larger, about $582,000. However, the

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[8] There are nine major exporters, as indicated in Table 2, but Liberia was not included in the regression for lack of data. Liberia, along with Somalia, were excluded from all the regressions run in this paper.

figure is very sensitive to South Africa's inclusion in the sample, as the removal of South Africa reduces the estimate to nearly $0.4 million. For the top 8 agricultural exporters, AGOA may have contributed an increase of over a million dollar worth in their quarterly agricultural exports to the United States, again with a slight average decline when South Africa is excluded from the sample. Although having the appropriate sign (for example, in the sense of Rose (2002)) who found that GSP encourages bilateral trade), the estimates have two major weaknesses. First, none of the figures is statistically significant, thus casting doubts on the robustness of the observed positive impact of AGOA on SSA's agricultural exports. Second, the specifications have a rather weak explanatory power, with R-squared ranging from less than 2% (in the base regression with all countries) to about 13% (in the regression of the top 8 exporters, excluding South Africa). The observed low explanatory power of the model stands in a sharp contradiction with the traditional empirical robustness of the gravity trade equation. The average quality of the data used in this study may, in part, be at the origin of the identified statistical weaknesses. Despite these weaknesses, the regressions have overall significance levels close to conventional ones, as indicated by the probability of rejection (Prob > F) ranging from 3.7% to 14.6% (Table 4).

The non-significance of the AGOA dummy can be attributed to many factors. First, being a relatively young initiative, it may take longer time before its impacts are materialized in terms of increased agricultural exports from SSA to US. This is the standard learning curve argument. Second, the implementation phase of AGOA coincided with an overall economic slowdown both in the US and the World, and this may have mitigated the real impact of AGOA on export performance in SSA. Third, the AGOA package covers commodities, such as textiles, that are not treated as agricultural commodities. Thus, as market access restrictions for non-agricultural commodities are softened under the AGOA legislation, their relative profitability may increase,

which will trigger a reallocation of resources from agriculture towards non-agricultural export sectors. Under such conditions, agricultural exports will shrink, rather than expand, as a consequence of AGOA.

Besides the inconclusive AGOA result, the year dummies capture more robust results. These dummies are highly significant and show important increases in the average agricultural exports with respect to the base year, 1998. The increases are also consistent across all the six regression results displayed in Table 4. For example, in the first regression in Column 1 (all 46 countries) SSA's quarterly agricultural exports increase, on average, by more that $4.2 millions in 1999, when compared to the base year 1998. These figures reached an average of about $9.8 millions in 2000, $10.7 million in 2001 and $13.1 million for each of the first three quarters in 2002, reflecting the over time growth in the average agricultural exports from SSA to US. Larger scale studies, such as Rose (2002) and Cheng and Wall (1999), did not find any significant impact of time dummies in explaining variation in bilateral trade between countries. These studies, therefore, concluded that globalization, defined as increased participation in the global trade system, was not an important factor in increasing trade over time. Our findings suggest that SSA's agricultural exports to US have intensified over the past five years.

Contrary to the basic expectation of gravity trade models, the coefficient on the US GDP was not positive. While the negative sign is hardly justifiable, it is possible that the GDP growth in US may not necessarily translate into increased demand for agricultural imports in US, as changes in the GDP are more likely to induce increases in the consumption of non-agricultural products, which tend to be more income elastic than agricultural products. Another reason that may explain the inconsistency is that in general, African exports are marginal in the US total

agricultural trade. Thus, observed variations in US GDP may not have any noticeable effect on the demand for these exports in the US markets.

Also puzzling is the sign of the population coefficient for exporting African countries. This coefficient is negative (the first four columns), though statistically not different from zero. Even though the theoretical literature is ambiguous regarding the sign of the coefficient, there is a tendency to interpret them following Bergstrand (1989), as indicated in Cheng and Wall (1999). Bergstrand's interpretation suggests that for exporting countries, a positive population coefficient indicates that exports are labor-intensive, whereas a negative sign suggests that they are capital-intensive. African agricultural exports to US are less likely to be capital-intensive.

Still using Bergstrand's framework, the positive US population coefficients suggest that US imports of agricultural commodities from Africa tend to be income inelastic, as usually is the case with most agricultural products. This would mean that basic commodities dominate SSA's agricultural exports to US, and this is consistent with the general patterns of the region's agricultural exports. In fact, African exports are generally concentrated on a few primary commodities, and this lack of diversification is usually attributed to poor investments in agricultural processing, but it is also due to selective tariff barriers on processed products in importing countries, a practice known as tariff escalation (see Nouve et al., 2002, for a discussion in the case of Western Africa). The observation that US import demand for SSA's agricultural products may be income inelastic reinforces the conjectured justification of the negative sign observed on the US GDP.

A final noteworthy variable in this section is the apparel visa's dummy. Again, even if textiles and apparel are not the central focus in this study, they constitute a centerpiece of the AGOA legislative, and are likely to determine non-oil trade dynamics between SSA and the US

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over the coming years. Similar to the AGOA dummy, the apparel dummy was positive but not

statistically different from zero. Thus, participation in the apparel market is positively correlated

with participation in the agricultural markets. Furthermore, the apparel provisions may constitute

an important factor explaining recent investment dynamics originating from both within and

outside SSA. Such dynamics are being observed, for example, in South Africa where the largest

agricultural company (OTK Limited) has relocated or acquired new ginning facilities within the

Southern African region. In particular, the company bought a cotton gin in Uganda in 2002.

Such strategic investment decisions are motivated by the special rule provisions, which allow

sourcing textile and apparel inputs from AGOA eligible countries (see Section II for details).

Increased investment in the cotton ginning is likely to be channeled through the supply chain,

with subsequent supply response in agricultural production. Thus, AGOA may affect agricultural

exports indirectly through the promotion, among others, of the textile sector within SSA. These

dynamics would not be directly reflected in the US-SSA agricultural trade that was investigated

in this paper[9].

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[9]We thank Michael Weber for directing our attention to these important trade and investment dynamics in Southern Africa. For details, see http://business.iafrica.com/news/947347.htm. In addition, Gibbon (2002) discussed how the performance of the clothing sector in South Africa, following EU and US preferential trade initiative, benefited mostly foreign-owned firms. However, irrespective of the ownership of factors, improved performance of the sector may be viewed as a positive impact of these preferential arrangements. Even in the case of the direct impact of AGOA on agricultural exports, there still will be questions regarding the distribution of the gains or losses from the legislation. This issue goes beyond the goal of this paper.

6. Conclusion

The central question investigated in this paper was to determine whether the African Growth and Opportunity Act (AGOA) has led to increased agricultural exports from Sub-Saharan African (SSA) to the United States since the law entered into force in late 2000. The question arises as there is an ongoing debate about whether the legislation has achieved (or is able to achieve) its main goal, which is the promotion of an export-led growth through increase in SSA's trading opportunities with the United States. This export-led growth is most likely to help transform the economic landscape of SSA, if it benefits the agricultural sector, which remains by far one of the most important activities in the largely agrarian African economies.

Our investigation, which is based on panel data regression using a fixed effects gravity trade model, generates a rather inconclusive answer regarding the response of SSA's agricultural exports to AGOA's commercial incentives. We found that the response was positive, as intended in the legislation. However, the AGOA-induced gains in agricultural exports are found not to be statistically different from zero. There is no doubt that AGOA is a relatively young initiative and that a few more years of additional data may be required for a more accurate and complete evaluation of the impacts of the legislation. However, the preliminary assessment carried out in this paper is also necessary for shaping the making of the AGOA process, if the aim is to make it very responsive to the needs of agricultural exports development in SSA. The mere existence of a positive relationship between AGOA and expansion of agricultural trade in Africa is encouraging for the continent. What is needed now is to maintain and reinvigorate efforts towards making this relationship really significant. The observed positive, albeit marginal, relationship between AGOA and SSA's agricultural exports speaks for the potential gains for AGOA eligible countries, as long as they continue to maintain political and economic

environments that are compatible with AGOA commitments. The relationship also speaks for the potential gains to the ten SSA countries that are not yet AGOA eligible, provided that they pass the admission conditionalities. It finally speaks for the potential opportunity cost to countries, such Eritrea, which face the prospect of being disqualified from the AGOA preferential benefits, if they fail to comply with the conditionalities.

Peripheral to the inconclusive result regarding the impact of AGOA on African agricultural trade, this study also obtains a more conclusive result regarding the trend of these exports over the past five years. It was found that African agricultural exports have consistently trended up during the last half-decade. Though secondary and indirectly related to the goal set forth in this paper, such an observation bears, nevertheless, some important implications for SSA's export-led development strategy. This is particularly relevant in this period of Post-Uruguay Round, a period characterized by the global objective to dismantle tariff and non-tariff barriers to world's agricultural trade. It is usually admitted that SSA is most likely to benefit from the ongoing global agricultural trade reforms through diversification of both the composition and the destination of its exports. At a time when most African countries are increasingly concerned with their declining share in the global agricultural markets following the Uruguay Round Agreements on Agriculture, it is encouraging to notice that, on average this trend may be reversed in the US exports market. The average positive trend does not, however, solve the problem of high concentration of the US trade with a handful of countries. It may therefore be useful to devise mechanisms that will allow a larger number of countries to participate in the export dynamics brought about by the new era of SSA-US trade relationship.

The results obtained in this study are fairly indicative of future directions in the SSA-US agricultural trade, particularly the possibility for African countries to expand their exports to US.

But, because of the average quality of the data used for the investigation, caution should be taken in drawing their implications. A large part of the variations in African agricultural exports to US remain unexplained in our model. Countries' idiosyncrasies certainly account for some of these variations, and so do other factors as well. As more data becomes available, future assessments of AGOA initiative, using either the gravity trade equation or alternative bilateral trade models, will most likely provide a richer characterization of the impacts of the legislation on African agricultural exports.

REFERENCES

Anderson, J. E. "A Theoretical Foundation for the Gravity Equation". *American Economic Review* (March 1979): 106-16.

Bergstrand, J. H. "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence". *Review of Economics and Statistics* 67 (August 1985): 474-81.

Bergstrand, J. H. "The Generalized, Monopolsitic Competition, and the Factor-Proportions Theory of International Trade". *Review of Economic and Statistics* 71 (1989): 143-153.

Blackman, K. and G. Mutume. "No Trade-and-Investment Miracles Expected". *Inter Press Service*, New York, April 2, 1998. p.1.

Cheng, I.-H. and H. J. Wall. "Controlling for Heterogeneity in Gravity Models of Trade". *Federal Reserve Bank of St. Louis Working Paper* 1999-010C, 1999.

Cooper, H. "Fruit of the Loom: Can African Nations Use Duty-Free Deal To Revamp Economy?" *Wall Street Journal*, New York, January 2, 2002. p. A1.

Deardorff, A. V. "Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World?" In *The Regionalization of the World Economy*, J. A. Frankel (ed.), University of Chicago Press, 1998.

Evenett, J. S. and W. Keller. "On Theories Explaining the Success of the Gravity Equation". *Journal of Political Economy* 110 (2) (2002): 281-316.

Food and Agriculture Organization of the United Nations (FAO). 2003. "Statistical Database". Online, www.fao.org/waicent/portal/statistics_en.asp, Rome: FAO.

Friedman, L. T. "U.S. Trade Policy Should Stop Punishing Africa". *Denver Post*, Denver, Colorado, Mars 8, 2000. p. B11, 2000a.

Friedman L. T. "Don't Punish Africa". *New York Times*, New York; Mars 7, 2000; p. A25, 2000b.

Gibbon, P. 2002. "South Africa and the Global Commodity Chain for Clothing: Export Performance and Constraints". CDR Working Paper 02.7 (April 2002), Copenhagen: Center for Development Research.

International Monetary Fund (IMF). 2002. "World Economic Outlook, September 2002". International Monetary Fund: Washington DC.: IMF.

International Monetary Fund and The World Bank. "Market Access for Developing Countries' Exports". Prepared by the Staffs of the IMF and the World Bank, April 27, 2001. Online, www.imf.org/external/np/madc/eng/042701.pdf, December 21, 2002.

International Monetary Fund and The World Bank. "Market Access for Developing Country Exports-Selected Issues". Prepared by the Staffs of the IMF and the World Bank, September 26, 2002. Online, www.imf.org/external/np/pdr/ma/2002/eng/092602.pdf, December 21, 2002.

Lairds, S. and A. Yeats. "Quantitative Methods for Trade Barriers Analysis". New York: New York University Press, 1990.

Lindsey, B. "Mixed Signals on Trade Barriers". *Wall Street Journal*, New York, July 30, 2002.

Mattoo, A., D. Roy and A. Subramanian. "The Africa Growth and Opportunity Act and Its Rules of Origin: Generosity Undermined?" *World Bank Policy Research Working Paper* 2908, October 2002.

Mutume, G. "What Does Clinton Hold for Pretoria?" *Inter Press Service*, New York, Mars 26, 1998. p. 1.

Nouve, K.L., J. Staatz, D. Schweikhardt and M. Yade. "Trading Out of Poverty: WTO Agreements and the West African Agriculture". MSU *International Development Working Paper* 80 (2002). Online, www.aec.msu.edu/agecon/fs2/papers/idwp80.pdf, December 18, 2002.

Poole, M. S. "African Group Comes Looking for Business". *The Atlanta Journal-Constitution*, Atlanta, Aug 28, 2002. p. E.6.

Pöyhönen, P. "A Tentative Model for the Volume of Trade Between Countries". *Weltwirtschaftliches Archive* 90 (1963): 93-100.

Raghavan, C. "Africa: NGOs Start Campaigns Against US AGOA". *Third World Network*, 2000. Online, www.twnside.org.sg/title/agoa.htm, August 13, 2002.

Rose, K. A. "Do We Really Know that the WTO Increases Trade?" *NBER Working Paper* 9273, October 2002. Online, www.nber.org/papers/w9273, December 20, 2002.

Tinbergen, J. "Shaping the World Economy–Suggestions for an International Economic Policy", *The Twentieth Century Fund*, 1962.

United States Department of Commerce. 2002. Comprehensive Report on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act. The Second of Eight Annual Reports, May 2002, Online, www.agoa.gov/About_AGOA/annual_2.pdf, February 2, 2003

United States Department of Commerce-Bureau of Economic Analysis (USDOC-BEA). 2003. "Current-Dollar and Real GDP's Online Database", Online, www.bea.doc.gov/bea/dn1.htm, USDOC-BEA.

Wall, J. H. "Using the Gravity Model to Estimate the Costs of Protection". *Review, Federal Reserve Bank of St. Louis*, January/February 1999: 33-40.

Wooldridge, J.M. 2002 "Econometric Analysis of Cross Section and Panel Data". Cambridge: The MIT Press.

World Trade Organization (WTO). "Market Access: Unfinished Business—Post Uruguay Inventory and Issues". *WTO Special Studies* 6 (2001), Geneva.

APPENDIX

Table 1: Average Quarterly Exports from Sub-Saharan Africa countries to the US

Countries	Agricultural Exports ($1,000)		Non-agricultural Exports ($1,000)		Total Exports ($1,000)		Share of Agricultural (%)	
	1998:1-2000:4	2001:1-2002:3	1998:1-2000:4	2001:1-2002:3	1998:1-2000:4	2001:1-2002:3	1998:1-2000:4	2001:1-2002:3
Angola	0	0	659760	719631	659760	719631	0.0	0.0
Benin	1530	101	442	168	1973	269	59.7	30.5
Botswana	5	28	6424	5939	6428	5967	0.1	0.6
Burkina F.	358	18	127	1070	485	1087	29.4	18.9
Burundi	1658	426	282	60	1939	486	82.2	86.7
Cameroon	2590	2778	20387	32834	22978	35613	16.3	10.0
Cape Verde	0	0	372	387	372	387	n.d.	0.0
Cen Afr.Rep	571	143	145	304	716	447	57.4	32.4
Chad	72	57	1512	1482	1583	1540	3.3	5.4
Comoros	453	2127	80	44	532	2171	71.1	96.6
Congo, DR	488	357	50765	34747	51252	35104	1.1	1.5
Congo, Rep.	748	676	102018	90219	102765	90895	0.7	1.0
Cote d'Ivoire	78738	53031	15748	25899	94486	78930	77.5	53.6
Djibouti	50	19	39	313	88	332	n.d.	4.6
Eq Guinea	1	3	21748	120823	21749	120826	0.0	0.0
Eritrea	43	10	75	50	118	60	26.2	19.4
Ethiopia	8164	6157	1098	932	9262	7089	89.0	86.9
Gabon	119	135	389976	421679	390095	421813	0.0	0.0
Gambia	1	35	261	60	262	96	1.2	19.1
Ghana	11628	11120	35007	28411	46635	39530	24.0	28.1
Guinea	431	630	26182	20349	26613	20979	1.5	4.4
G-Bissau	0	0	193	6	194	6	n.d.	n.d.
Kenya	9818	9801	16438	28694	26255	38495	37.5	26.4
Lesotho	0	0	29268	66871	29268	66871	0.0	0.0
Liberia	8151	10782	331	472	8481	11253	96.0	95.9
Madagascar	9039	27316	16740	38758	25779	66074	39.3	37.4
Malawi	13013	13960	777	3092	13791	17051	93.7	79.8
Mali	302	91	1419	1018	1721	1110	18.6	8.6
Mauritania	0	0	125	83	125	83	3.3	0.0
Mauritius	2285	2404	65324	67633	67610	70038	3.2	3.4
Mozambique	4637	1017	398	250	5035	1267	89.3	62.1
Namibia	165	13	10156	9155	10321	9168	1.8	0.2
Niger	32	1	1097	304	1128	304	7.8	1.0
Nigeria	2023	2670	1535982	1851079	1538006	1853749	0.2	0.2
Rwanda	519	667	546	654	1065	1321	42.6	41.7
S. Tom.& P.	2	0	322	102	324	102	7.1	0.0
Sénégal	95	939	2145	14129	2241	15068	8.7	18.6
Seychelles	6	0	1284	6258	1290	6258	1.2	0.0
Sierra Leone	52	80	2149	903	2201	983	4.3	8.9
Somalia	37	16	74	78	112	94	22.7	28.2
South Africa	28674	29131	842138	1042050	870812	1071181	3.3	2.7
Sudan	23	68	390	508	413	575	n.d.	10.0
Swaziland	1996	1050	7621	19726	9617	20776	14.8	5.5
Tanzania	1996	1786	6450	4772	8446	6559	23.4	27.4
Togo	373	244	551	1850	924	2094	50.6	20.7
Uganda	3786	2845	1586	1224	5373	4069	73.3	66.3
Zambia	308	204	8255	2972	8563	3176	4.8	8.3
Zimbabwe	5583	6713	25360	17030	30943	23743	17.1	27.8
SSA	**200561**	**189648**	**3909566**	**4685074**	**4110127**	**4874722**	**5.3**	**4.1**

Source: US International Trade Commission (USITC)

Table 2: Major Exporters of Agricultural Products from SSA to the United States

Countries/Items	1998-2000	2001	2002*
Total SSA's exports ($ million)	752.6	757.6	569.9
		Share of (%)	
Cote d'Ivoire	40.4	30.0	25.3
South Africa	14.1	14.0	17.2
Malawi	6.2	7.8	6.7
Ghana	6.1	7.7	3.5
Kenya	4.8	5.1	5.2
Madagascar	4.2	11.1	18.8
Ethiopia	4.1	3.4	3.1
Liberia	3.9	5.4	6.0
Zimbabwe	2.9	3.1	4.1
Total share of the nine countries above	**86.7**	**87.5**	**90.0**

*Data in 2002 is for the first three quarters
Source: US International Trade Commission (USITC)

Table 3: Major Exporters of Non-agricultural Products from SSA to the United States

Countries/Items	1998-2000	2001	2002*
Total SSA's exports ($ million)	13731	20303	12493
		Share of (%)	
Nigeria	38.5	43.9	32.4
South Africa	22.0	21.3	23.8
Angola	17.0	13.7	18.1
Gabon	10.1	8.5	9.8
Total share of the four countries above	**87.7**	**87.4**	**84.1**

*Data in 2002 is for the first three quarters
Source: US International Trade Commission (USITC)

Table 4: Regression Results (p-values in parentheses)

Dependent Variable: AGX_{it} (Quarterly Agricultural Exports from SSA country i to US, in $1000)	Full Sample (46 countries)		Post-AGOA Average of $AGX_{it} \geq \$100,000$ (27 countries)		Top 8 Agricultural Exporters	
	All countries (1)	Excluding S. Africa (2)	All countries (3)	Excluding S. Africa (4)	All countries (5)	Excluding S. Africa (6)
GDP_i (millions US dollars)	0.580 (0.530)*	3.198 (0.123)	0.524 (0.676)	3.498 (0.286)	0.641 (0.809)	5.322 (0.7110
GDP_j (billions US dollars)	-13.811 (0.001)	-15.207 (0.000)	-23.794 (0.001)	-26.630 (0.000)	-77.300 (0.001)	-95.469 (0.000)
N_i (1,000 inhabitants)	-0.153 (0.735)	-0.525 (0.313)	-0.027 (0.966)	-0.492 (0.537)	0.529 (0.880)	0.052 (0.989)
N_j (1,000 inhabitants)	0.745 (0.082)	0.953 (0.027)	1.271 (0.083)	1.681 (0.026)	3.791 (0.125)	5.483 (0.048)
d99 (1 in 1999, and 0 else)	4256.2 (0.010)	4437.1 (0.008)	7272.4 (0.010)	7606.7 (0.009)	23912.7 (0.012)	28081.3 (0.009)
d00 (1 in 2000, and 0 else)	9784.8 (0.001)	9988.7 (0.001)	16811.0 (0.001)	17429.1 (0.001)	55658.9 (0.002)	64793.1 (0.001)
d01 (1 in 2001, and 0 else)	10688.1 (0.003)	10910.1 (0.003)	18253.0 (0.003)	19178.3 (0.003)	60083.4 (0.004)	71270.2 (0.003)
d02 (1 in 2002, and 0 else)	13127.6 (0.003)	13337.6 (0.003)	22333.9 (0.004)	23383.8 (0.003)	74549.2 (0.004)	87865.8 (0.003)
$AGOA_i$ (AGOA dummy)	376.1 (0.765)	471.7 (0.709)	582.5 (0.793)	394.9 (0.862)	1143.8 (0.885)	1027.5 (0.907)
$VISA_i$ (Apparel visa dummy)	2070.5 (0.175)	1636.5 (0.291)	3106.0 (0.191)	2458.0 (0.318)	10084.8 (0.180)	8556.1 (0.359)
Intercept (α_0)	-78475.6 (0.406)	-121757.6 (0.201)	-134464.6 (0.406)	-218589.7 (0.190)	-359417.2 (0.503)	-659910.2 (0.275)
N	874	855	513	494	151	132
Group	46	45	27	26	8	7
R-squared	0.0189	0.0236	0.0319	0.0386	0.1013	0.1282
Overall significance (Prob > F)	0.1094	0.0374	0.0517	0.1127	0.1465	0.0909

*P-values are in parentheses