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Effect of the African Growth and Opportunity Act on the Structure of Public Revenue in Sub-Saharan Africa

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Abstract

The present analysis investigates the effect of the eligibility to the African Growth and Opportunity (AGO) programme, and of the suspension of the benefits associated with this programme on the total public revenue and its structure in beneficiary (or suspended) Sub-Saharan African countries. The analysis has shown that the eligibility to the AGO programme has yet contributed to the increase in total public revenue, but this reflects essentially an increase in resource-based revenue. The analysis has also revealed that export product diversification and an increase in the share of manufactured exports in total merchandise exports mediate the effect of the AGO programme on public revenue indicators in beneficiary countries. In particular, countries that diversify their export product baskets, and those that improve their manufactured export performance tend to enjoy a higher non-resource based public revenues. Finally, the suspension of the benefits from the AGO programme leads to a decrease in total public revenue, including resource revenue and, both tax revenue (notably resource tax revenue) and nontax revenue (both the resource and non-resource components of the latter). The analysis, therefore, shows that non-reciprocal trade preferences (here, the AGO programme) can enhance non-resource-based public revenue in beneficiary countries that endeavour to foster their manufactured exports and diversify their export products. In the meantime, the suspension of the AGO programme leads to a significant fall in public revenue in the suspended countries, especially for resource-rich countries. The implications of these findings are discussed.

Keywords: African Growth and Opportunity Act (AGO); Public revenue structure; Export product diversification; Manufactured export performance; Sub-Saharan Africa.

JEL Classification: F14; O11; H20.

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1. Introduction

Mobilizing public revenue is critical for funding sustainable development efforts, especially in Sub-Saharan Africa (SSA) countries that need huge financial resources to realize their development objectives. For example, the 2024 African Economic Outlook estimates that Africa needs investments in the trillions of dollars a year to succeed in structural transformation, reach the SDGs, and attain the milestones in Agenda 2063² (AfDB, 2024: p157). Specifically, fast-tracking structural transformation alone will require filling a financing gap of \$402.2 billion (AfDB, 2024: p157).

Export activities represent a significant source of revenues for SSA countries, not only in the form of direct revenue from exporting public enterprises, but also in terms of tax revenue arising from the tax base expansion due to exporting activities. The African Growth and Opportunity Act (AGOA) can be an important source of public revenue for SSA countries. It is a United States' Trade Act in the form of unilateral trade preference programme, which is potentially available to 49 SSA countries. The Act was enacted on 18 May 2000, renewed on several occasions, including most recently in 2015, and is valid until 30 September 2025. It builds on the US Generalized System of Preferences³ (GSP) because to qualify for AGOA, a country should be eligible for the US GSP programme. The AGOA is more generous than the US unilateral trade preference under the GSP programme, as compared to the GSP scheme, it provides duty-free treatment for additional 1,835 products originating from SSA.

The US President has the discretion of designating SSA countries that will be eligible to the benefits of the AGOA programme, and those that can be suspended from the eligibility to such benefits. The eligibility requirements include for example, the establishment or continued progress towards a market-based economy, rule of law, the elimination of barriers to U.S. trade and investment, the implementation of economic policies to reduce poverty, a system to combat corruption and bribery, and protection of worker rights (USITC, 2023: p16). Among these, two main common reasons are, however, used to justify the loss of eligibility to the programme, and include concerns over the rule of law and political pluralism (USITC, 2023: p42-43). Brenton and Ikezuki (2004) have emphasized that to entrench and enhance the benefits of AGOA, the scheme has to be extended over a longer period, if not made permanent. The joint study conducted by the Africa Growth Initiative at Brookings and the United Nations Economic Commission for Africa (Mevel et al., 2013) strongly advises the extension of the AGOA programme, as otherwise, there would be a significant decline in African exports, lower economic diversification and employment for many AGOA-eligible countries.

² The “Africa We Want” Agenda also referred to as “Agenda 2063” is a blueprint and master plan for the continent's sustainable development and economic growth. It is accessible online at: https://au.int/Agenda2063/popular_version

³ The Generalized System of Preferences (GSP) schemes are programmes designed by developed countries to offer unilateral trade preferences to qualifying developing countries. The provision of these non-reciprocal trade preferences aims to promote goods exports by these countries, and hence export product diversification, and ultimately economic development. The Enabling Clause, adopted in 1979 by contracting parties of the General Agreement on Tariffs and Trade, provides the permanent legal basis for granting trade preferences to developing countries (e.g., Grossman and Sykes, 2005).

At the 21st AGOA Forum⁴ held on 24-26 July 2024 in Washington DC, the US President Joe Biden called on Congress to quickly reauthorize and modernize this landmark act⁵. This call resonates with the findings in the literature that the AGOA programme plays a significant role in SSA' export expansion. In fact, several studies have shown that the AGOA programme has contributed significantly to fostering SSA's goods exports, although those exports have been dominated by natural resource products (petroleum and minerals) and agricultural products, as a few countries have been capable of expanding into manufacturing and other industrial goods (e.g., Coulibaly and Kassa, 2022; Fernandes et al., 2023; Frazer and Van Biesebroeck, 2010; Portugal-Perez, 2008). Concurrently, two other studies have revealed that the suspension of SSA beneficiary countries from the AGOA benefits leads harms significantly concerned countries' exports, specially manufactured exports (Edjigu et al., 2023; Sorgho, 2024).

Several works have examined the effects of the AGOA programme on some macroeconomic variables, including the price received by apparel exporters (Olarreaga and Özden, 2005), as well as the volume/value of goods exports (as indicated above), export product diversification, economic growth, foreign direct investment inflows, and employment (see the literature review by Tadesse, 2024). To the best of our knowledge, no study has considered the effect of the AGOA programme on public revenue, let alone its structure. The present paper aims to contribute to this evolving AGOA-related empirical literature by investigating the effect of both the eligibility to the AGOA programme, and the suspension of the benefits attached to this programme, on total public revenue and its structure in beneficiary countries (SSA countries). In so doing, the article contributes to the strands of the literature that straddles the macroeconomic effects of non-reciprocal trade preferences, and the determinants of public revenue (and structure of public revenue).

The analysis has used two panel datasets. The first of these is the one that allows investigating the effect of the AGOA programme on public revenue. It contains 42 SSA countries eligible to the benefits of the programme (treatment group), and 33 developing countries (non-SSA IDA countries) that represent the control group, with data covering the annual period from 1996 to 2022. The second panel dataset covers the annual period from 2001 to 2022, and contains 16 SSA countries in the treatment group (these are countries suspended at least once from the benefits of the AGOA programme) and 26 SSA countries in the control group, i.e., SSA AGOA beneficiaries that were never suspended from the benefits of that programme. The analysis has established several findings. It has shown that the AGOA programme has contributed to enhancing resource-based revenue in beneficiary countries. Countries that diversify export products, including improve their manufactured export performance, tend to enjoy higher non-resource based public revenues. Finally, the AGOA suspension results in a decrease in total public revenue, including resource revenue and, both tax revenue (notably resource tax revenue) and nontax revenue (both the resource and non-resource components of the latter).

⁴ This is an annual US-SSA Trade and Economic Cooperation Forum. It is a ministerial meeting (a high-level dialogue) that aims to promote closer economic ties between the United States and SSA.

⁵ The statement is available online at: <https://www.whitehouse.gov/briefing-room/statements-releases/2024/07/23/statement-from-president-joe-biden-on-the-african-growth-and-opportunity-act-agoa-forum-in-washington-dc/>

2. Background of the AGOA programme

The African Growth and Opportunity Act (AGOA) is a United States (US) unilateral trade preferences programme, which aims, *inter alia*, to encourage trade and investment between the US and SSA in support of economic and political developments throughout SSA countries (United States Congress, 2000). It was enacted on 18 May 2000 by President William J. Clinton, and quickly became one of the most high-profile Special and Differential Treatment (SDT⁶) programmes implemented (e.g., Olarreaga and Özden, 2005). Section 506A of the Trade Act⁷ of 1974 authorizes the President to offer duty-free treatment to certain products from eligible SSA beneficiary countries⁸, in addition to the products designated for duty-free treatment for these countries under the US Generalized System of Preferences (GSP). This US President's authority was exercised on 18 December 2000 when the President designated 1,835 products as eligible for duty-free treatment in the United States when originating from an AGOA beneficiary country, in addition to the more than 5,100 products that are eligible under the US GSP programme (USTR, 2024; WTO, 2023: paragraph 2.1). Likewise, Section 506A of the 1974 Trade Act authorizes the US President to designate certain SSA countries eligible for benefits under AGOA. These eligibility criteria include, *inter alia*, the establishment or continued progress towards a market-based economy, rule of law, the elimination of barriers to U.S. trade and investment, the implementation of economic policies to reduce poverty, a system to combat corruption and bribery, and the protection of worker rights (USITC, 2023).

At its inception, the programme was available to 49 countries in the Sub-Saharan Africa region, and the majority of potential SSA beneficiaries (not effective beneficiaries) have become effectively AGOA beneficiaries (i.e., AGOA benefits eligible) at some point in time. As of January 2023, 36 of the 49 SSA countries⁹ were beneficiaries of the AGOA program, and 4 of those 49 SSA potentially eligible for the AGOA programme, had never been designated as AGOA beneficiaries. These are Equatorial Guinea, Somalia, Sudan and Zimbabwe. Somalia and Sudan have never submitted a request for designation as an AGOA beneficiary, and have therefore not been reviewed by the US for eligibility to AGOA benefits (USTR, 2022: p83). The remaining two countries - Equatorial Guinea¹⁰ and Zimbabwe have never been designated to become AGOA beneficiaries because they failed to meet several AGOA benefits eligibility criteria (e.g., human rights, rule of law, corruption, economic reform, and, for Equatorial Guinea, child labor) (USITC, 2023: p43). Incidentally, Equatorial Guinea is no longer eligible to the AGOA programme because it graduated from GSP in 2011.

After completing its initial 15 years period of validity, the AGOA was extended (on 29 June 2015) by a further 10-year time horizon, to 30 September 2025. At the 21st AGOA Forum¹¹ held on 24-26

⁶ The SDT are special provisions in WTO Agreements that give developing countries special rights and allow other members to treat them more favourably (https://www.wto.org/english/tratop_e/dda_e/status_e/sdt_e.htm)

⁷ The 1974 Trade Act is accessible online at: <https://www.govinfo.gov/content/pkg/COMPS-10384/pdf/COMPS-10384.pdf>

⁸ This is without extending the same duty-free treatment to like products of any other country.

⁹ Since 2012 (after the recognition by the international community of the newly independent country of South Sudan), 49 countries have been defined to be part of the SSA region for purposes of AGOA (USITC, 2023: p37).

¹⁰ It is worth noting that Equatorial Guinea was eligible for the AGOA program before 2011 (USITC, 2023: p43).

¹¹ This is an annual US-SSA Trade and Economic Cooperation Forum. It is a ministerial meeting (a high-level dialogue) that aims to promote closer economic ties between the United States and SSA.

July 2024 in Washington DC, the US President Joe Biden called on the Congress to quickly reauthorize and modernize this landmark act¹².

The SSA's goods export performance¹³ under AGOA has been discussed in some reports (only through statistical analyses). UNCTAD (2023: p7) notes that the tariffs foregone under AGOA for SSA' exporters amounted approximately to \$5-6 billion during the period from 2001 to 2021, which represents \$250-300 million in tariffs during the average program year. In terms of values, SSA exports worth \$791 billion (an average of \$37.7 billion per year) under the AGOA program over the period from 2001 to 2021 - which is five times higher than the US development aid allocated to these countries (\$145 billion - an average of \$7.6 billion per year) during fiscal years 2001 through 2019. In other words, even though the export impact of the AGOA programme is not as substantial across beneficiaries as expected (due to the low preference margins and structural disadvantages faced by eligible SSA countries), the exports by these countries would have been lower if they did not benefit from the AGOA programme.

According to WTO (2023), SSA goods exports under AGOA increased by 59.2 per cent, from US\$6.0 billion in 2021 to US\$9.6 billion in 2022. However, this trend reflects a dominance of mineral fuels, which represented approximately 47.7 per cent (against 31.8 per cent in 2021). Apart from mineral fuels, other leading categories (non-mineral fuels) of US imports under the AGOA programme included apparel¹⁴ (14.3 per cent of total US imports¹⁵) and motor vehicles (reaching approximately US\$1.48 billion). Leading exporters of apparel were Kenya, Lesotho, Madagascar, Mauritius, Tanzania, Ghana, and South Africa, the latter being the largest non-oil AGOA beneficiary. In 2023, major exporters (under AGOA) of mineral fuels, especially crude oil exporters included Nigeria (the leading major crude oil exporter) followed by Angola, Ghana, and Republic of Congo (USTR, 2024).

The above-described background on the AGOA programme and the (statistical) export performance of SSA countries under this programme, are essential for the discussion on how this programme (or its suspension thereof) can affect total public revenue and its structure in beneficiary countries.

3. Discussion of the effect of the AGOA on public revenue and its structure

This section discusses how benefiting from the AGOA programme, or being suspended from those benefits affects public revenue and its structure in SSA countries.

As the main direct effect of the AGOA programme is expected to be on exports, we argue that the main effect of the AGOA programme or the suspension of countries from the eligibility to that programme (henceforth referred to as "AGOA suspension") on total public revenue (and its structure) would work through the export channel (including the income derived from export activities) and

¹² The statement is available online at: <https://www.whitehouse.gov/briefing-room/statements-releases/2024/07/23/statement-from-president-joe-biden-on-the-african-growth-and-opportunity-act-agoa-forum-in-washington-dc/>

¹³ See USITC (2023), WTO (2023) and USTR (2024) for detailed discussion, from the statistical perspectives, on the of SSA' goods export performance.

¹⁴ Since 2001, 18 AGOA beneficiary countries have exported apparel products to the United States under AGOA (WTO, 2023).

¹⁵ The leading category of apparel is cotton men's or boy's trousers and shorts.

notably through revenue from export product diversification. Export activities can affect the structure of public revenue through a variety of channels, including jobs creation by exporting firms, a higher corporate income, and increases in wages for exporting firms' employees. In turn, the improvement in corporate income and in individual income (workers' income) would raise respectively corporate tax revenue, and personal income tax revenue, and hence, direct tax revenue. Likewise, thanks to the positive export effects of the AGOA programme, both exporting firms and employees in these firms can increase domestic consumption of goods and services, and generate an increase in indirect tax revenue. Countries that export manufactured exports can enjoy a significant positive effect of the AGOA programme on public revenue, especially non-resource public revenue. This is because these countries (especially those that diversify their export products basket) enjoy a higher product price, and higher export income. Minondo (2020) has investigated the relationship between export price and export revenue in eight low-income and middle-income countries. He has established that manufacturing exporting firms enjoy an increase in export revenues from their high-price products, while the relationship is weak for primary products, and nonexistent for extractables. Moreover, diversifying the export product basket towards high-value manufactured goods is associated with an improvement in export performance and, with higher export revenue both at the aggregate level (e.g., Funke and Ruhwedel, 2001, 2002), and at the firm-level (e.g., Balabanis, 2001; Njikam, 2017; Solano et al. 2019; Xuefeng and Yaşar, 2016).

The AGOA programme can also affect international trade tax revenue. In resource-rich countries, the exploitation of natural resources for export purposes can involve the importation of specialized materials, equipment, and technologies that are not available in the domestic market (e.g., Lartey, 2024). As a result, the export of natural resource products under the AGOA framework may lead to a higher trade tax revenue, including tariff revenues, unless the government opts for not taxing those imported intermediate goods. Likewise, non-resource rich countries that endeavour to diversify their export product baskets toward light manufactured goods, can also demand for higher imports of intermediate goods and collect higher import tax revenue. Trade tax revenue may also be collected by SSA countries regardless of whether they are resource rich or non-resource rich, if governments tax their export products, albeit at low rates. Workers that have enjoyed higher wages thanks to the AGOA programme can also demand higher imports of consumption goods, and thus allow the government to enjoy a rise in international trade tax revenue. Incidentally, in resource-rich countries, the foreign exchange revenue obtained from selling natural resource products can generate a higher demand for imports, which enhances the value of the domestic import market, notably in developing economies that have limited local substitutes (Arezki et al., 2021). In turn, the increase in the demand for imports could yield higher tariff revenue. Above all these channels, the AGOA programme can affect the structure of public revenue through its possible positive spillover effects, especially to other sectors than the exporting sector (USITC, 2023), and ultimately contribute to the expansion of the tax base.

However, it is unlikely that these effects be uniform across all SSA beneficiary countries of the AGOA programme, as some countries' goods exports to the US are dominated by resource products (e.g., mineral fuels), while others' goods exports are dominated by manufactured products such as apparel. For example, country that export primarily resource products can collect more resource revenue and be less incentivized to collect domestic tax revenue, while countries whose good exports

are dominated by manufactured exports will likely collect more tax revenue, and be less inclined to collect resource revenue.

Overall, the effect of the AGOA programme or of the AGOA suspension from this programme on total public revenue would depend on the structure of public revenue, and also whether countries tend to export manufactured goods relatively to primary commodities, and more generally whether countries tend to diversify export products or not.

The arguments laid down above raised a number of questions. What has the literature said about the effect of the AGOA programme on goods exports, in particular on export product diversification by beneficiary countries? What about its effect on employment and wages in these countries?

The next sub-section (sub-section 3.1) enlightens our discussion on the differentiated effects of the AGOA programme on the export of resource products (e.g., mineral fuels) versus manufactured exports on the beneficiary countries' public revenue structure. It provides a review of the literature that has investigated whether resource-based economies behave differently from non-resource-based countries in terms of public revenue collection (e.g., resource revenue versus non-resource revenue). Sub-section 3.2 provides a brief literature review on the effect of the AGOA programme on goods exports by beneficiary countries, and on how the AGOA suspension has affected the suspended countries' goods exports. Sub-section 3.3 presents the findings of the literature concerning the effect of the AGOA programme on employment and wages, notably in the manufacturing sector (e.g., apparel sector). Finally, sub-section 3.4 builds on these different literature reviews, and on the above discussion, to lay down the hypotheses that will be tested empirically.

3.1. Do resource-based economies mobilize more non-resource tax revenue?: A literature review

It is usually argued that governments' reliance on resource rents is associated with a lower mobilization of non-resource revenues (e.g., Moore, 1998, 2007; Collier, 2006), which reduces the incentive for the public scrutiny of government (e.g., Collier, 2006). The majority of relevant empirical studies have considered whether a country's resource wealth leads to a de-mobilization of other (non-resource) domestic revenues by investigating empirically the effect of resource revenue on non-resource tax revenue. The findings of these studies is that resource revenues tend to crowd-out non-resource tax revenue mobilization. For example, Bornhorst et al. (2009) have obtained that an increase in hydrocarbon revenues leads to a fall in domestic revenues mobilization. Ossowski and Gonzáles (2012) have found that resource revenue crowds out non-resource revenue with structural breaks both over time and across countries. Compared to other countries, resource exporters have a similar performance (in terms of collection) of the VAT and of non-resource income taxes, while for revenues from other taxes (including excises), resource exporters' performance is lower than that of other countries. Crivelli and Gupta (2014) have reported that an increase in resource revenues is associated with lower taxes on goods and services (notably value-added tax), but exerts a lower negative effect on corporate and trade taxes. Thomas and Trevino (2013) have found for SSA countries that there exists an inverse relationship between resource and non-resource revenues (both expressed in percentage of GDP), effect that is particularly acute in countries with weak institutions. The impact,

however, becomes statistically nil when authors normalize non-resource revenues by resource GDP. The eviction effect of resource revenues on non-resource revenues has been reported by other studies such as Mohtadi et al. (2017), Mawejje (2019) and Taylor (2024). In contrast with previous findings, Knebelmann (2017) has observed that there exists no significant effect of oil revenue on non-oil tax revenue in oil and gas-producing countries.

In contrast with previous findings, Chachu and Nketiah-Amponsah (2020) have identified that an increase in resource revenues encourages the mobilization of non-resource tax revenues. The authors have explained these findings by the fact that the natural resource trade strategy by China with developing countries may have conferred some positive benefits on non-resource tax effort. Through its resource-for-infrastructure deals, China's investment in critical social and economic infrastructure in resource-rich developing countries might have contributed to the improvement in the business environment, and hence the expansion of the non-resource tax base. Low-income countries and lower-middle income countries have specifically enjoyed the positive spillovers of these China's infrastructure deals, so as to reverse the fiscal¹⁶ resource curse, and expand their non-resource tax base. The study by Lartey (2024) has investigated the effect of oilfield discoveries (and not that of resource revenue as in many other studies) on non-resource tax revenue effort, and challenged previous findings. The author has observed that countries endowed in natural resources tend to mobilize less non-resource tax revenues relatively to other countries. The author has found that news concerning the discovery of a natural resource could exert a potential anticipatory effect on non-resource tax revenues, even before the country starts exploiting the natural resource discovered. Specifically, non-resource tax revenue (notably non-resource indirect tax revenue) tend to increase in the period following the discovery before the onset of production and after production commences. This runs in contrast with the popular belief that the discovery of a natural resource results in the anticipation of future revenue inflows and provides strong incentives to invest less in fiscal capacity (e.g., Besley and Persson, 2013), which weakens the tax systems (e.g., Knack, 2009). Overall, while many studies have found that an increase in resource-revenue tends to be associated with lower incentives to collect a higher non-resource tax revenue, a few recent studies have reported the reverse outcome, that is, an increase in non-resource revenue may go hand-in-hand with an expansion of non-resource tax revenue, and hence with higher non-resource revenue.

3.2. Literature review on the effect of the AGOA programme on exports

Existing studies have reported a strong positive effect of the AGOA program on the exports by eligible countries, including compared to pre-AGO levels, and to other SSA non-beneficiary countries with similar economic traits¹⁷ (e.g., Coulibaly and Kassa, 2022; Didia et al., 2015; Fernandes et al., 2023; Frazer and Van Biesebroeck, 2010; Portugal-Perez, 2008). However, these AGOA effects vary considerably across sectors. Coulibaly and Kassa (2022) have shown that while most AGOA-eligible SSA countries registered gains in exports under the AGOA program, such gains arose essentially from the exports of natural resource products (petroleum and minerals) and of agricultural

¹⁶ Chachu and Nketiah-Amponsah (2020) have defined the “fiscal resource curse” as the inability of countries to raise taxes from a broad base in the presence of natural resources.

¹⁷ See the literature review by Tadesse (2024).

products, with a few countries being able to expand into manufacturing and other industrial goods. Gains from energy product exports were largely unstable, while gains from nonfuel exports increased consistently over the years of AGOA eligibility, but were tempered by preferences erosion, especially the expiration of the Multi-Fiber Agreement. These findings align with those by Frazer and Van Biesebroeck (2010) that the increase in exports under AGOA was driven by petroleum (73.5%), followed by apparel (42%), minerals (16.6%), manufactured goods (14.6%), and agricultural goods (8%). Along the same lines, Fernandes et al. (2023) have reported that the AGOA programme has, on average, spurred beneficiary countries' apparel exports, although the impact was uneven across beneficiary countries, and levelled off after the Multi-Fiber Arrangement strengthened competition from Asian countries. While Central and West Africa did not take a great advantage of the AGOA opportunities, Southern Africa experienced a significant positive marginal impact in the first period, which wanes over time to become insignificant. East African countries enjoyed a significant and growing positive marginal impact of the AGOA on exports during the early and latter periods, and Kenya stands out as a country whose exports responded positively throughout. The impact was minimal for Ethiopia, Rwanda and Tanzania in the first period, but became strongly positive in the latter periods. Several other works have shown how the AGOA has been instrumental in helping beneficiary-countries upgrade their export-oriented textile and apparel sector (e.g., Mattoo et al., 2003; Seyoum and Abraham, 2022; Kaplinsky and Morris (2015) for Madagascar; Lall (2005) for Lesotho; Staritz (2012) for Mauritius). Didia et al. (2015) have observed that while receiving AGOA status has strongly fostered the overall trade with the US, there is a disproportionate impact of crude oil exports to the US from the oil-producing countries (Angola, Gabon, and Nigeria). This is at odds with the intent of the Act. In the same spirit, UNECA (2015: p145) states that “*AGOA has clearly not helped Africa to diversify its export products, with energy commodities still constituting the bulk of AGOA eligible countries' exports to the US.*” Overall, a few beneficiary countries have taken meaningful advantage of the opportunities offered by the AGOA programme to spur manufactured exports, as exports under the scheme is mostly on natural resource products.

These findings are in sync with those of studies that have explored the effect of the AGOA programme on export product diversification. For example, according to Cook and Jones (2015), the AGOA has contributed to fostering export product diversification at the extensive margin in AGOA eligible countries, notably thanks to the AGOA-apparel provision. Eligible countries for export under the AGOA apparel provision contributed to fostering their exports of both apparel products, and non-apparel products to the US market. Brenton and Ikezuki (2004) have noted that leading exporters (e.g., Kenya, Lesotho, Madagascar and South Africa) experienced an increase in the extensive product margin during the first three years of AGOA programme. Frazer and Van Biesebroeck (2010) have found that beneficiaries of the AGOA experienced an overall positive effect of the AGOA program on extensive product margin in the short run, but gains fell in magnitude and significance over time for non-apparel exporters. Collier and Venables (2007) have pointed out the lack of complementary productivity-enhancing policies to make the AGOA programme useful in supporting a widespread export product diversification in beneficiary countries. In fact, the authors have observed that the AGOA program has been successful in spurring non-resource-based exports, although its export product diversification impacts have been limited to a few product categories. Tadesse and Fayissa

(2008) have noted that over the period 1991-2006, the AGOA program induced a relatively higher import initiation effect than it fostered export of manufactured and non-manufactured goods to the US market.

Overall, while some AGOA-eligible SSA countries have enjoyed a higher export growth under the AGOA program, the absorptive capacity constraints and governance challenges have prevented others from taking full advantage of the program (Tadesse, 2024). *Building on this literature review, we can surmise that the AGOA programme can lead to an increase in resource-revenue, eventually at the expense of non-resource tax revenue. This can be in particular the case for resource-rich SSA countries. Conversely, in non-resource rich SSA countries (that tend to export more of non-resource-based products, including manufactures), the AGOA programme can lead to a higher non-resource revenue (especially non-resource tax revenue), eventually at the expense of resource-revenue.*

Besides, two recent studies have drawn attention to the adverse export consequences of the suspension from the benefits of the AGOA programme. Edjigu et al. (2023) have found that the suspension of the AGOA act would result in a fall of eligible SSA countries' exports to the US markets (under AGOA) by 39%, with a specific decline of apparel and textile exports by about 88 percent. Sorgho (2024) have uncovered that the eligible SSA countries that were suspended from the benefits of the AGOA programme between 2004 and 2020, lost on average 11.7 billion USD in the value of their exports to the US market (691 million USD on average per year). According to Mevel et al. (2013), the non-renewal of the AGOA program would result in decline in African exports, lower economic diversification and employment for many AGOA-eligible countries. *It follows from these findings that the suspension of the benefits from the AGOA programme could result, for the suspended country, in a public revenue loss, especially in lower resource revenues for resource-rich countries, and a decline in non-resource revenues (including non-resource tax revenue) for non-resource rich countries.*

3.3. Literature review on the employment and wage effects of the AGOA programme

The employment creation effect of the AGOA has been the subject of a few studies (essentially country-specific studies) in the literature, as the existing evidence has so far been anecdotal (see USITC, 2023). This literature also tends to focus on the employment and wage effects of AGOA in the manufacturing (especially apparel) sector. Regarding the anecdotal evidence, industry representatives from several SSA countries have underlined the critical role of the apparel sector in generating employment in the apparel industry, and higher wages in the apparel industry relatively to other industries in the economy (Otobe, 2015; USITC, 2023: p133). For example, in Madagascar, the average salary for jobs in the apparel manufacturing industry that supports exports under AGOA was 103 dollars per month in 2018 against 56 dollars per month for jobs in Malagasy jobs not producing exports for AGOA. As far as studies are concerned, Phelps et al. (2009) have emphasized that the export of apparel under AGOA contributes significantly to net job growth in Kenya, but this effect will be sustainable only if the government addresses the potential constraints on industrial upgrading. Grogan (2023) has noted for the Lesotho¹⁸ that the employment of women in ready-made garment (RMG) factories in new industrial zones significantly increased under AGOA, but well-paid RMG

¹⁸ Lesotho is one of the SSA beneficiaries of AGOA that has taken greatly advantage of AGOA's tariff preferences and liberal rules of origin for apparel to significantly increase its apparel exports to the US under AGOA.

work opportunities were reduced by the shocks to international demand for textile products (phase-out of the WTO's Multi-Fiber Agreement and 2008 financial crisis). Tadesse (2024) has concluded that while AGOA might have spurred employment, particularly in sectors like apparel, its overall effect on job creation in eligible countries has remained subtle, i.e., the job creation effect of the AGOA is not broad-based¹⁹.

This brief literature review shows that exporting manufactures under the AGOA programme can be a significant and stable source of non-resource tax revenue (eventually at the detriment of resource revenue), including direct and indirect tax revenue. However, one may not rule out the possibility of a positive (although non-lasting) effect of the AGOA programme on employment and wages in the resource sectors that are more capital intensive than labour intensive sectors.

Concurrently, the suspension from the AGOA program (i.e., the loss of AGOA benefits) has resulted in substantial job losses in Madagascar, as an estimated 50,000-100,000 workers became unemployed during the five-year period Madagascar lost the benefits of the AGOA program (USITC, 2023: p134). Therefore, *one could expect that the suspension of countries from the eligibility for the AGOA programme would adversely affect public revenue, especially via a significant fall in non-resource revenue in non-resource rich countries, and eventually a decline in resource-revenue in resource-rich countries.*

3.4. Hypotheses to be tested empirically

Building on the discussion and literature surveys presented in section 3, we posit the following hypotheses.

Hypothesis 1: Higher export revenues under the AGOA programme will be associated with an increase in total public revenue. The effect of the AGOA programme may, however, be different in resource-based economies and non-resource-based economies. It can generate an increase in resource revenue in the former, and higher non-resource revenue (especially non-resource tax revenue) in the latter, especially those that improve their share of manufactured exports in total goods exports.

Hypothesis 2: Exporting under the AGOA programme will likely generate a higher total public revenue for beneficiary countries than for non-beneficiary countries of the AGOA programme, although there may be differentiated effects of the AGOA programme on various components of total public revenue.

Hypothesis 3: The mix findings of the literature on the relationship between resource dependence and non-resource revenue mobilization needs to be put into perspective with the findings concerning the effect of export product diversification (or alternatively manufactured exports) on non-resource revenue. Gnanon (2018) has found that export product diversification helps reduce countries' public revenue dependence on resource revenue, and Gnanon (2021) has obtained that export product diversification enhances the mobilization of non-tax revenue in developing countries (Gnanon, 2021). Against this backdrop, one may expect that non-resource-based economies, especially those that improve the share of manufactured exports in total exports (including those that

¹⁹ This is likely due to the dominance of natural resource (including energy) products (which are more capital intensive than labor intensive) in SSA countries' exports to the US under the AGOA program (see discussion above).

diversify export products) will likely mobilize a higher non-resource revenue (especially non-resource tax revenue) than resource-based economies. In absence of an improvement in export product diversification or an improvement in manufactured export performance, resource-based economies will tend to rely on resource revenue at the detriment of non-resource revenue (of which non-resource tax revenue). Therefore, we expect that the effect of the AGOA programme on public revenue can depend on countries' level of export product diversification or countries' manufactured export performance. In particular, the effect of the AGOA programme on non-resource tax revenue can y be greater in countries with a greater export diversification or higher manufactured exports in total goods exports (*hypothesis 3.1*). In the meantime, the AGOA programme can exert a greater positive effect on resource-revenue in countries that have diversified less their export products or those with a weak manufactured export performance (*hypothesis 3.2*).

Hypothesis 4: Being suspending from the benefits of the AGOA programme will result in a higher decline in total public revenue for suspended SSA countries compared to SSA beneficiaries of the programme that were never suspended from the programme. However, there may be differentiated effects of the AGOA suspension on different public revenue components.

4. Empirical strategy

This section firstly uses the within fixed effects estimator to investigate empirically the effect of goods exports under the AGOA programme on total public revenue and on the structure of total public revenue (sub-section 4.1). Second, it uses the Entropy Balancing approach proposed by Hainmueller (2012) to investigate the effect of the AGOA programme and the AGOA suspension on total public revenue and its structure (sub-section 4.2).

4.1. Effect of goods exports under AGOA on public revenue

We start the empirical analysis by testing hypothesis 1, which involves examining the effect of exporting under the AGOA programme on public revenue variables. The main variable of interest here is the share (in percentage of GDP) of goods exports under the AGOA program. It is denoted "SHEXPAGOA". Data on the value of goods exports (current US\$) under the AGOA program were extracted from the AGOA.info website (<https://agoa.info/data/trade.html>). Data on the GDP indicator (current US\$) were extracted from the World Bank's World Development Indicators (WDI). We also include in the analysis the variable "SHOEXP", which represents the share (in percentage of GDP) of goods exported to the world, excluding the export of goods to the US under the AGOA programme. This variable is computed as the difference between the value (current US\$) of a country's total goods exports to the world and the value (current US\$) of the same country's goods exports under the AGOA programme. Data on the value of the total goods exports (current US\$) were collected from the United Nations Conference on Trade and Development (UNCTAD)'s database²⁰. The inclusion of both "SHEXPAGOA" and "SHOEXP" in the model specification aims to obtain the effect of exporting under the AGOA programme on public revenue indicators, while concurrently controlling for the effect of other exports on public revenue.

²⁰ The dataset is accessible online at: <https://unctadstat.unctad.org/datacentre/>

We draw from the abundant literature on the macroeconomic determinants of public revenue²¹, and use a set of control variables likely to influence the effect of the AGOA programme or of the suspension of the programme on public revenue. These controls are the real per capita income (in natural logarithm), which acts as a proxy for the development level (denoted “GDPC”); trade policy liberalization, proxied by the “Measure of Aggregate Trade Restrictions” (denoted “MATR”) developed by the International Monetary Fund; the share (in percentage of GDP) of the value added in manufacturing (denoted “VAMAN”); an indicator of political rights (denoted “PRIGHT”); the inflation rate (“INFL”); the annual population growth rate (in percentage) (“POPGR”), and an indicator of institutional quality (“INST”). All these control variables are described in Appendix 1. The control variables “GDPC”, “MATR”, “PRIGHT” and “INST” are introduced with a one-year lag in the model specification to mitigate endogeneity concerns (reverse causality problem), while the other controls are introduced at year t .

In a nutshell, the baseline model that helps test hypothesis 1 takes the following form:

$$REV_{it} = \alpha_0 + \alpha_1 SHEXPAGO_{it} + \alpha_2 SHOEXP_{it} + \beta X_{it} + \gamma_t + \mu_i + \varepsilon_{it} \quad (1)$$

where i and t are subscripts respectively for a country and a year in the unbalanced panel dataset constructed on the basis of available data. This panel dataset contains 42 SSA countries (of which 15 resource-rich SSA countries) that are eligible to the AGOA programme, and data on variables span the annual period from 2001 to 2022. The dataset starts from 2001 because the AGOA programme entered into force in 2001. For each SSA country, the dates of eligibility for the AGOA programme, and the dates of suspension from the benefits of this programme (in the event the concerned country was suspended) are collected from AGOA.info (<https://agoa.info/about-agoa/country-eligibility.html>) which is an online information and exporter support portal on the AGOA. These dates are also available in USITC (2023: p271-274), especially in Table E.1 of Appendix E (titled “AGOA Eligibility”).

The lists of the 42 SSA countries and of the resource-rich countries among them are provided in Appendix 5a. α_0 to α_2 are parameters to be estimated. Likewise, β is a vector of parameters associated with each variable in X_{it} . The latter includes “GDPC” (in natural logarithm), “MATR”, “PRIGHT” and “INST” introduced with a one-year lag; and the variables “VAMAN”, “INFL” and “POPGR” introduced in year t . γ_t are time dummies that represent global shocks affecting simultaneously all countries’ public revenue. μ_i are countries’ unobserved time-invariant specific effects, and ε_{it} is a well-behaving error term.

The dependent variable “REV” is the indicator of public revenue as a share (in percentage) of GDP. In the analysis, we use many indicators of public revenue, all of them being extracted from the UNU-WIDER Government Revenue Dataset²² (version 2023). The indicator of total public revenue

²¹ See for example, Apeti and Edoh (2023); Baunsgaard and Keen (2010); Bird et al. (2008); Brun et al. (2015); Cagé and Gadenne (2015); Crivelli and Gupta (2014, 2018); Gnangnon (2018, 2021); Gnangnon and Brun (2019); Khattry and Rao (2002); Morrissey et al. (2016).

²² It is accessible online at: <https://www.wider.unu.edu/project/grd-government-revenue-dataset>

is measured by the share of total public revenue (excluding grants and social contributions) in percentage of GDP. As indicated above, we also use indicators of the structure of the total public revenue. The first two indicators of public revenue structure are resource revenue and non-resource revenue. The indicator of resource revenue is measured by the share of resource revenue in percentage of GDP (denoted “RESREV”). Resource revenues are defined as natural resources-based revenues²³, and include natural resources-based tax revenue and natural resources-based non-tax revenue. The indicator of non-resource revenue is measured by the share of non-resource revenue in percentage of GDP (denoted “NRESREV”). It is computed as the difference between the indicators “TOTREV” and “RESREV” described above.

The other measures of the public revenue structure include the total tax revenue - of which the resource tax revenue and non-resource tax revenue - and non-tax revenue, including its resource component, and non-resource component. The indicator of total tax revenue (denoted “TAXREV”) is measured by the share of total tax revenue (excluding social contributions) in percentage of GDP. The indicator of resource-tax revenue is measured by the share of resource tax revenue in percentage of GDP (denoted “RTAX”). The indicator of non-resource tax revenue (“NRTAX”) is measured by the share of non-resource tax revenue in percentage of GDP. Non-resource tax revenue is the difference between total tax revenue (excluding social contributions) and resource tax revenue, the latter being the tax revenue collected on natural resources. The indicator of non-tax revenue is measured by the share of non-tax revenue in percentage of GDP, denoted “NTAX”. Non-tax revenue is the difference between total public revenue (excluding social contribution) and (total) non-resource tax revenue. It includes resource non-tax revenue and non-resource non-tax revenue (i.e., non-tax revenue collected from sources other than natural resources). The resource component of non-tax revenue is measured by the share of resource non-tax revenue in percentage of GDP (“RNTAX”), and its non-resource component (i.e., non-resource component of non-tax revenue) is measured by the share of non-resource non-tax revenue in percentage of GDP, denoted “NRNTAX”.

Finally, we deepen the analysis by considering how the AGOA programme and its suspension affect the two major components of non-resource tax revenue, which are non-resource domestic tax revenue, and trade tax revenue. The indicator of non-resource domestic tax revenue (“NRDOMTAX”) is measured by the share of non-resource domestic tax revenue in percentage of GDP. Non-resource domestic tax revenue is the sum of non-resource direct tax revenue (excluding social contributions) and non-resource indirect tax revenue. The indicator of trade tax revenue (denoted “TRTAX”) is measured by the share of (total) trade tax revenue (i.e., tax revenue on international trade) in percentage of GDP.

Overall, we use each of the public revenue indicators described above as dependent variable (“REV”) in model (1). We estimate this model over the full sample of the 42 SSA countries, as well as over the sub-samples of resource-rich countries, and non-resource rich countries (i.e., countries in the full sample, except for the resource-rich countries). We use the within fixed effects estimator along with the Driscoll and Kraay (1998) technique (referred to as FEDK estimator) to obtain spatial correlation consistent standard errors. The Driscoll and Kraay (1998) technique produces standard

²³ Natural resources include a significant component of economic rent, primarily from extractives, including oil and mining activities.

errors that are robust to the presence of cross-sectional dependencies, heteroskedasticity, and autocorrelation with moving average processes of different lag lengths (e.g., Hoechle, 2007). The outcomes of the regressions are reported in Table 1. For the sake of brevity, we present in this Table the outcomes concerning our main variables of interest, which are “SHEXPAGOA” and “SHOEXP”, and the estimates of control variables can be obtained upon request.

4.2. Analysis based on the Entropy Balance approach

Benefiting from the AGOA program or being suspended from the benefits of this program is not exogenous, but is at the discretion of the preference-granting country (i.e., the United States) which relies on a set of criteria for the eligibility to the AGOA program and the suspension from the benefits of that program, the main ones being the income criterion, and the rule of law and political pluralism criteria (USITC, 2023: p42-43). These show that the eligibility for the AGOA programme and the suspension from the benefits of that programme are not exogenous and depend on specific features of SSA economies. The non-randomness nature of the choice of countries that can benefit from the AGOA program and those that can be suspended from the same program results in a self-selection problem. As a result, the conventional Difference-in-Difference (DiD) technique used to estimate the causal effects of a programme when treatment assignment is non-random cannot be applied in the present analysis.

Our identification strategy, therefore, consists of using an impact assessment approach, in particular a method that combines “matching” and “difference-in-difference” (DiD) techniques to investigate the effect of the eligibility to the AGOA program and the AGOA suspension on total public revenue and its structure. This approach is considered as superior to pure cross-sectional matching estimators (Heckman et al., 1997) and involves combining the literature concerning the selection on observables with the literature on selection on unobservables. For the analysis on the effect of the AGOA programme on total public revenue and its structure, the “matching exercise” entails building a dataset of AGOA beneficiary countries (treatment group), and a database of countries that share similar characteristics with countries in the treatment group but have never been eligible to the benefits of AGOA (control group). Specifically, we use as control group, countries that are not SSA countries but are eligible to financial resources provided by the International Development Association²⁴ (IDA) - henceforth referred to as “IDA countries”. IDA countries are considered by the World Bank as the world’s poorest developing countries. These are countries in the world that are eligible to grants and low-interest loans in order to reduce poverty. IDA countries (as per the World Bank’s definition) include SSA countries and countries in other regions²⁵ of the world, AND include Asia (East Asia, South Asia, Europe and Central Asia), Latin America and the Caribbean and, the Middle East and North Africa. To investigate the effect of the suspension from the benefits of the AGOA programme on total public revenue and its structure, we use as treatment group countries that have been benefiting from the programme, but were suspended at least once from the

²⁴ The International Development Association is the World Bank’s arm, which offers grants and low-interest loans to the world’s poorest developing countries with a view to reducing poverty in these countries. Further information on the World Bank’s IDA is available online at: <https://ida.worldbank.org/en/home>

²⁵ The list of the World Bank’s IDA countries is accessible online at: <https://ida.worldbank.org/en/about/borrowing-countries>

benefits of the programme. The control group contains SSA countries that were benefiting from the AGOA programme, and have never been suspended from the benefits of this programme.

To make countries in the treatment group as close as possible to those in the control group (i.e., to increase similarities between the two groups' characteristics), we use the entropy balancing (EB) approach – which is a reweighting technique that focuses directly on the balancing on conditioning variables (e.g., Hainmueller, 2012). The EB approach re-weights observations in the full sample so that the covariate distribution of countries in the treatment group is similar to the covariate distribution of countries in the control group. In so doing, it produces a set of unit adjustment weights that obtained by minimizing a loss function – that utilizes the directed Kullback (1997)'s entropy divergence as a distance metric - under predetermined balance constraints imposed on a set of conditioning variables' moments (mean, variance, and skewness). The control group, therefore, satisfies pre-specified balancing requirements as in the treatment group (e.g., Apeti and Edoh, 2023, 2024; Balima, 2020; Basri et al., 2021; Gutmann et al., 2021, 2023; Neuenkirch and Neumeier, 2016; Ogrokhina and Rodriguez, 2024). Under the condition that the units in the control group (e.g., IDA NonSSA countries) are close to the units in the treatment group (e.g., SSA AGOA beneficiaries), the differences in the outcome variable (here, a public revenue indicator) between countries in the treatment and control groups are attributed to the AGOA programme (i.e., for example, caused by the AGOA program).

The EB method has many advantages over conventional matching methods such as the propensity score approaches. *First*, the propensity score matching does not uniformly improve the balance across all the covariates (e.g., Iacus et al., 2012), while the entropy balancing helps achieve a greater balance quality by allowing the covariate moments to be automatically balanced by the algorithm (Hainmueller, 2012). Additionally, the EB does not discard units from either the treatment or control groups. *Second*, even though they can, in general, increase the matching's quality in terms of covariate balance, conventional matching with replacement techniques generate a higher efficiency cost when the number of observations used decreases. The estimates' biases arising from the low covariate balance are particularly severe in small samples that have limited control units: in this case, the conventional matching approach does not ensure a sufficient balance of pre-treatment characteristics across treatment and control groups (e.g., Caliendo and Kopeinig, 2008). Hainmueller (2012) has shown that the EB approach performs better than conventional matching techniques such as propensity score matching, in terms of estimation bias and mean square error. Building on theoretical results and simulations, Zhao and Percival (2017) have concluded that the EB approach is doubly robust with respect to linear outcome regression and logistic propensity score regression. Moreover, EB reaches the asymptotic semiparametric variance bound when both regressions are correctly specified. In that regard, it is a very appealing alternative technique to the conventional weighting estimators that estimate the propensity score by maximum likelihood. *Third*, the EB's method weights are as close as possible to the uniform base weights, thereby generating more efficiency in the subsequent estimations. It is even considered as a generalization of the commonly used propensity score weighting methods. Furthermore, the weighing approach in the EB does not require continuous adjustments in specifications between different stages, given that weights are derived automatically from the imposed balance constraints. As a result, researchers do not need to test the balancing of the treatment and

control groups (e.g., Ogrokhina and Rodriguez, 2019). *Fourth*, as noted by Balima (2020), the EB approach is more versatile than simple regression-based techniques such as the difference-in-difference approach, or conventional matching methods in that it does not require that the researcher specify an empirical model for the selection into the treatment. In this way, the EB method helps avoid potential problems of misspecification, multicollinearity, or wrong choice of the functional form. Last but not least, the use of EB allows the researcher to take advantage of the dimensions of the panel dataset by controlling for time-variant characteristics of countries along with countries' heterogeneity (i.e., time invariant countries' specific effects) and time specific factors in the regression analysis. This is in contrast with conventional matching techniques that rely on the conditional independence assumption (that is, conditional to the vector of observable covariates, the treatment is independent of unobservable).

In practice, the EB approach is implemented in two steps. The first step entails computing the weights that allow the reweighed control group to satisfy pre-specified balancing requirements, i.e., the same moments (e.g., mean, variance, skewness) of covariates as in the treatment group. In the second step, these weights are utilized to construct the sampling weights, and the new sample is used in a regression analysis where the dependent variable is here a public revenue indicator, and where one regressor is a dummy variable capturing the eligibility to the AGOA program (or alternatively a dummy capturing the AGOA) depending on whether we investigate the effect of the eligibility to the AGOA programme on public revenue (or the effect of the suspension from the benefits of the program on public revenue). Control variables can be introduced in the equation to reduce the omitted variable bias. The coefficient (estimated parameter) of the dummy variable obtained from the regression analysis represents the causal effect of the eligibility to the AGOA program (or alternatively the suspension from the benefits of this program) on the relevant public revenue indicator.

In the present analysis, the EB technique is used to test hypotheses 2 to 4. We proceed with our EB-based empirical analysis as follows. In the *first step*, we compute the weights that allow the reweighed control group to satisfy pre-specified balancing requirements, i.e., ensure the same moments (mean, variance, skewness) of covariates as in the treatment group. This allows the covariates to have the same moments in both the treatment and control groups. To compute those weights, we need to select variables that determine the selection into the treatment, i.e., whether a country meets the necessary pre-conditions to become eligible to AGOA benefits (or whether conditions to be suspended from the AGOA programme are met). As indicated in section 3, the AGOA programme builds on the US GSP programme in that to qualify for AGOA, a country must be eligible for the US GSP programme. The US GSP scheme has an income limit whereby a beneficiary of the programme must graduate from the programme when it becomes a high-income country, according to the World Bank classification of countries. Since the entry into force of the AGOA programme, only two SSA countries (Seychelles and Equatorial Guinea) lost eligibility to the AGOA programme due to the income-based criterion for graduation from the GSP. Seychelles graduated from the GSP programme effectively from January 1, 2017, and subsequently lost eligibility for AGOA benefits. As emphasized above, even though Equatorial Guinea was eligible for the AGOA programme before 2011, it graduated from the GSP programme in 2011, and became *de facto* non-eligible for the AGOA programme. In addition to the income criterion, there are other requirements for a country to be

eligible for AGOA benefits. These requirements fall into five main areas (e.g., USITC, 2023: p16): economic area (status of the AGOA country's market economy, economic reform, and elimination of barriers to U.S. trade); political area (rule of law, political pluralism, and anti-corruption); poverty reduction area; labor, child labor, and human rights; and terrorism and security. However, as noted by USITC (2023: p42-43), two major criteria (related to a country's political environment) among those five criteria justify countries' loss of eligibility to the AGOA programme. These are concerns over the rule of law and political pluralism²⁶. In a nutshell, we use three main variables to capture the necessary pre-conditions to become eligible to AGOA benefits (or to lose such eligibility, i.e., to be suspended from AGOA benefits). These are the income criterion measured by the real per capita income; the criterion of political rights²⁷ and the criterion of institutional quality. The latter combines several institutional quality indicators, and is obtained by extracting the first principal component (based on factor analysis) of six indicators of governance, which are political stability and absence of violence/terrorism; regulatory quality; rule of law; government effectiveness; voice and accountability, and corruption (see Kaufmann and Kraay, 2023). Following previous studies that employed the EB approach²⁸, we use the one-year lag of these three variables – the real per capita income (in natural logarithm); the political right indicator, and the institutional quality indicator - to compute the weights. We also take cue from Rosenbaum and Rubin (1983) and present in Tables 2a and 2b the outcomes of the sample 'means' of the matching covariates after weighing. For the dataset that allows investigating the effect of the AGOA programme on public revenue indicators, these outcomes compare the means and the standardized difference in means of variables for countries in the treatment and control groups (see the outcomes in Table 2a). For the dataset that permits to investigate the effect of the AGOA suspension on public revenue indicators, the reported outcomes compare the means and the standardized difference in means of variables for countries in the treatment and control groups (see the outcomes in Table 2b). It appears from both Tables 2a and 2b that the reweighted means of covariates (column [4] of each of these two Tables) are almost identical to the target values of covariates (column [1] of each of these two Tables). Moreover, the standardized difference between the target value and the balanced value is close to zero for all variables (column [6] of each of these two Tables), which shows the achievement of a high degree of balance.

[Insert Table 2a, here]

[Insert Table 2b, here]

In the *second step of the EB approach*, we use the weights obtained in the first step to construct the sampling weights. We, then, estimate the model specification by means of the within fixed effects estimator along with the Driscoll and Kraay (1998) technique.

²⁶ It is important to note, concerning the other criteria, that over the period from 2000 to 2023, no country lost AGOA benefits eligibility for failure to meet the criteria of "Poverty Reduction or Terrorism and Security". Likewise, no country lost AGOA eligibility only because it failed to meet the anticorruption criteria. However, in 2012, coups d'état in Guinea-Bissau and Mali resulted in the loss of eligibility to AGOA benefits for these two countries. This reflects the fact these two countries fail to meet the eligibility criteria on corruption, political instability, and human rights USITC (2023: p42, footnote 58).

²⁷ Political rights capture the extent of free and fair elections, political pluralism and participation, and a functioning government (<https://freedomhouse.org/report/freedom-world>)

²⁸ See for example, Apeti and Edoh (2023, 2024); Basri et al. (2021); Gutmann et al. (2021); Gutmann et al. (2023); Neuenkirch and Neumeier (2016); and Ogrokhina and Rodriguez (2024).

The baseline model specification is as follows:

$$REV_{it} = \theta_0 + \theta_1 TREAT_{it} + \delta X_{it} + \gamma_t + \mu_i + \varepsilon_{it} \quad (2)$$

where i and t are as defined above. There are two different unbalanced panel datasets here, depending on whether the analysis concerns the effect of the AGOA programme on public revenue or whether it focuses on the effect of the AGOA suspension on public revenue. For the analysis concerning the effect of AGOA programme on public revenue, the panel dataset includes 42 SSA countries eligible to the benefits of the programme (treatment group, referred to as “TG1”), and 33 developing countries (non-SSA IDA countries) that constitute the control group (referred to as “CG1”). The data on all variables cover the annual period from 1996 to 2022 (over the period from 1996 to 2000, there was no implementation of the AGOA programme). The lists of countries contained in these treatment and control groups are presented in Appendices 2a and 2b.

For the analysis concerning the effect of the AGOA suspension on public revenue, the treatment group (referred to as “TG2”) contains 16 SSA countries, which have been suspended at least once from the benefits of the AGOA programme. The control group (referred to as “CG2”) contains 26 SSA that have been benefiting from the AGOA programme, and were never suspended from the benefits of that programme. The data cover here the annual period from 2001 to 2022, i.e., from the first year of the implementation of the AGOA programme to the last year for which data are available on variables used. The lists of countries contained in these treatment and control groups are provided in Appendices 3a and 3b.

The dependent variable “REV” is as defined above, and can be any of the public revenue indicators described above. The variable “TREAT” is the treatment variable (a dummy variable) that is constructed differently depending on whether we examine the effect of the AGOA programme on public revenue, or whether we consider the effect of the AGOA suspension on public revenue. For the former analysis, the variable “TREAT” takes the value of 1 for the years during which a country benefits from the AGOA programme, and the value of 0 for years during which the country did not benefit from the AGOA programme, including the years of suspension from the AGOA benefits. For the analysis concerning the effect of the suspension from the benefits of the AGOA programme on public revenue, the variable “TREAT” takes the value of 1 for the years during which a country was suspended from the benefits of the AGOA programme, and the value of 0 for the other years.

θ_0 and θ_1 are parameters to be estimated. X_{it} is the same vector of control variables introduced in model (1). It contains, *among others*, the variables used in the empirical model for the selection into the treatment, i.e., benefiting from the AGOA programme, or being suspending from those benefits. δ is a vector of parameters associated with each variable in X_{it} . γ_t are time dummies that stand for global shocks affecting all countries’ public revenue. μ_i are countries’ unobserved time-invariant specific effects, and ε_{it} is a well-behaving error term.

For the sake of brevity, we present all EB-based estimations’ outcomes (obtained by means of the FEDK estimator) only for our main variable of interest (the variable “Treat”) in model (2), and where relevant, the estimates of the mediator-variables, i.e., export product diversification or alternatively manufactured exports. The outcomes of control variables could be obtained upon request.

Tables 2 to 4 contain outcomes that permit to test hypotheses 2 and 3. Table 3 contains the outcomes of the estimation of model (2) over the full sample. Table 4 reports estimates that permit to test hypothesis 3 (over the full sample), that is, the extent to which the effect of the AGOA programme on total public revenue and its structure depends on countries' level of export product diversification or alternatively, the manufactured export performance. To obtain these outcomes, we estimate several variants of model (2). Some variants of this model allow examining how the AGOA programme affects public revenue indicators for varying levels of export product diversification. This involves introducing in model (2) an indicator of overall export diversification along with its interaction with the dummy variable "TREAT". Two main indicators of export product diversification are used. The first of these indicators is the Theil-based index of overall export product concentration (denoted "ECI") computed by the International Monetary Fund, following the definitions and methods employed in Cadot et al. (2011). Higher values of this indicator show a greater overall export product concentration, and lower values indicate a tendency for a greater (overall) export product diversification. The second indicator of export product diversification (which is an alternative measure of export product diversification) is the indicator of Herfindahl-Hirschmann Index of export product concentration (denoted "ECIUN") computed by the United Nations Conference on Trade and Development (UNCTAD), using export product data at the three-digit SITC, Revision 3 level. Higher values this index indicate a greater export product concentration, and lower values of the index show a greater export product diversification. All export product diversification indicators are described in Appendix 1.

The last variant of model (2) is nothing else than model (2) in which we introduce the share (in percentage) of manufactured exports in total merchandise exports (denoted "SHEXPM"), and the interaction between the latter and the dummy variable "Treat". The indicator "SHEXPM" is computed using the manufactured exports (current \$US) and the total merchandise exports (current \$US), both being extracted from the UNCTAD database²⁹ (see Appendix 1 for the description of this indicator).

Finally, we report in Table 5 the estimates that help test hypothesis 4, that is, the effect of the AGOA suspension on public revenue (and the structure of public revenue) over the full sample.

5. Data analysis

Before moving to the interpretation of the empirical outcomes, we find useful to examine the averages (over all relevant countries and the period) of key public revenue indicators in the treatment and control groups TG1 versus CG1 (see Figure 1), and TG2 versus CG2 (see Figure 2). These public revenue indicators are the share (in percentage) of total public revenue in GDP ("TOTREV") and its major components. These are on the one hand, the share (in percentage) of resource revenue in GDP ("RESREV") and the share (in percentage) of non-resource revenue in GDP ("NRESREV"); and on the other hand, the share (in percentage) of tax revenue in GDP ("TAXREV") and the share (in percentage) of non-tax revenue in GDP ("NTAX"). We note from Figure 1 that, on average, over the period from 1996 to 2022, total revenue was slightly larger in CG1 than in TG1, which reflects yet a higher non-resource revenue in CG1 than in TG1, but a lower resource revenue level in CG1 than in

²⁹ The database is accessible online at: <https://unctadstat.unctad.org/datacentre/>

TG1. In other words, SSA AGOA beneficiaries tend to exhibit a higher resource revenue than countries in the control group, but a lower non-resource revenue than countries in the control group. From the perspective of tax revenue versus non-tax revenue (within the total public revenue) in TG1 and CG1, we observe that countries in TG1 and CG1 tend to collect almost the same level of tax revenue, but SSA beneficiaries of the programme tend to collect less non-tax revenue than countries in the control group. These statistics indicate that being beneficiary of the AGOA programme can affect countries' public revenue and its structure.

[Insert Figure 1, here]

[Insert Figure 2, here]

Turning to Figure 2, we note that total revenue was lower, on average, in SSA countries that were suspended at least once from the benefits of the AGOA programme (group TG2) than in SSA beneficiary countries that were never suspended from the programme (CG2). However, this reflects a far lower resource revenue in the former than in the latter, but a slightly higher non-resource revenue in the former than in the latter. From the tax revenue versus non-tax revenue perspective, we observe that both tax revenue and non-tax revenue were lower in SSA countries that were suspended at least once from the benefits of the AGOA programme than in those that were never suspended from the programme. These statistics underline the possible negative effects that the AGOA suspension might have on the total public revenue and its structure in suspended countries.

6. Results' interpretation

This section interprets the outcomes reported in Table 1 (results concerning the effects of goods exports on public revenue that help test hypothesis 1) and those in Tables 3 to 5 (EB-based estimations' outcomes) that allow testing hypotheses 2 to 4.

[Insert Table 1, here]

Outcomes in Table 1 indicate for the full sample of SSA AGOA beneficiaries that the positive effects of exporting under AGOA are larger than those associated with the non-AGOA exports (except in columns [3] and [7]). We find that except for resource-tax revenue, trade tax revenue, and resource non-tax revenue where the estimates are not significant at the 10% level (see respectively columns [6], [8], and [10]), non-AGOA exports exert a positive and significant effect on public revenue indicators.

Turning specifically to the effect of goods exports under the AGOA programme, we obtain for the full sample (see the top of Table 1) that exporting under the AGOA programme has led to an increase in total public revenue, especially resource revenue (see columns [1] and [2]). It has exerted a negative effect on non-resource revenue, but only at the 10% level (see column [3]). In terms of magnitude of these effects, a 1 percentage point increase in the share of goods exported under AGOA in GDP is associated with a 0.68 percentage point increase in total public revenue, and specifically an improvement in resource revenue by 0.83 percentage point. Concurrently, when considering the components of total public revenue from the perspective of tax revenue versus non-tax revenue perspective, we find that exporting under AGOA has led to an increase in both tax revenue (see column [4]) and non-tax revenue (see column [9]). A 1 percentage point increase in the share of goods

exports under AGOA in GDP is associated with an increase in tax revenue and non-tax revenue respectively by 0.36 percentage point, and 0.67 percentage point. As for the effect of exporting under the AGOA programme on the components of tax revenue, we observe that the AGOA programme has exerted no significant effect on non-resource tax revenue at the conventional significance levels (see column [5]), but it has been associated with an improvement in resource tax revenue (see column [6]). Outcomes regarding the effect of exporting under the AGOA programme on the components of non-tax revenue suggest a positive effect on non-tax revenue (see column [9]), including on both resource non-tax revenue and non-resource non-tax revenue (see respectively columns [10] and [11]), with the positive effect being larger on resource non-tax revenue than on the non-resource component of non-tax revenue. Finally, considering the non-resource tax revenue components (see columns [7] and [8]), we find that exporting under the AGOA programme has exerted no significant effect on non-resource domestic tax revenue, but it has led to an increase in trade tax revenue.

For resource-rich SSA AGOA beneficiaries, the outcomes indicate that non-AGOAs exports of goods are associated with an improvement in total public revenue, including resource-revenue, but it has not significantly affected non-resource revenue. Likewise, non-AGOAs goods exports have exerted a positive effect on non-tax revenue (only on its non-resource components), but no significant effect on tax revenue, including resource-tax revenue (at the 5% level), and non-resource tax revenue. Concerning the components of non-resource tax revenue, we obtain no significant effect of non-AGOAs goods exports on domestic tax revenue, but a negative effect on trade tax revenue. As for the effect of exporting goods under the AGOA programme on total public revenue and its structure, estimates show a strong positive effect on total public revenue, including on resource revenue, but no significant effect on non-resource revenue (see columns [1] to [3]). The magnitude of the positive effects on total revenue and resource revenue are respectively 0.72 and 0.82. Exporting under AGOA is also associated with an improvement of both tax revenue and non-tax revenue (especially on resource tax revenue – as the effect on non-resource nontax revenue is statistically nil): the positive effect is far larger on non-tax revenue (the estimate is 0.7) than on tax revenue (the estimate is 0.31) (see columns [4] and [9] to [11]). The positive effect of the goods exports under the AGOA programme on tax revenue in resource-rich countries reflects a contrasting effect on its non-resource and resource components: the effect of the programme is negative on non-resource tax revenue (estimate is equal to -0.098), but positive on resource tax revenue (the estimate is equal to 0.464). Within the non-resource tax revenue component, we obtain a positive effect of the export under the AGOA programme on trade tax revenue, but no significant effect on domestic tax revenue. A key take-away from these findings is that in resource-rich SSA AGOA beneficiaries, the export of goods under the AGOA programme leads to an increase in total public revenue. However, this public revenue improvement reflects merely a greater mobilization of resource revenue, especially resource tax revenue, and resource non-tax revenue. Exporting under AGOA leads to a demobilization of non-resource tax revenue, as it does not affect domestic tax revenue, but only influences positively trade tax revenue.

Finally, for non-resource rich SSA AGOA beneficiaries (see the bottom of Table 1), the programme has exerted a positive effect on total public revenue at the 5% level. This reflects a positive effect on non-resource domestic tax revenue, notably on non-resource nontax revenue. At the 5%

level, the programme exerts no significant effect on other public revenue indicators. In the meantime, non-AGOA exports affect positively total public revenue (including both resource-revenue and non-resource revenue), but are associated with a larger positive effect on resource-revenue than on non-resource revenue. At the 5% level, the programme fosters both tax revenue and non-tax revenue mobilization, especially the non-resource component of non-tax revenue (see respectively columns [4], [9] and [11]). The programme does not affect all other public revenue indicators at the 5% level.

[Insert Table 3, here]

Let us now consider the outcomes reported in Tables 3 to 5. To recall, these outcomes are obtained by means of the Entropy Balancing approach. We note from Table 3 (see the top of the Table) that over the full sample, the AGOA programme has boosted total public revenue mobilization to a greater extent in SSA AGOA beneficiaries than in non-beneficiary countries, i.e., countries in the control group (see column [1]). This positive outcome on total public revenue reflects a positive and significant effect of the AGOA programme on resource revenue, but no significant effect on non-resource revenue (see columns [2] and [3]). In terms of magnitudes of the effects, the AGOA programme has induced an improvement in total public revenue and resource-revenue mobilization respectively by 0.88 percentage point and 2.41 percentage point. Likewise, there is no significant effect of the AGOA programme on tax revenue (see column [4]), but the programme has been associated with a greater mobilization of non-tax revenue (the estimate is 2.27 - see column [9]), especially of resource-tax revenue (but only at the 10% - see column [10]). There is, however, no significant effect of the programme on the non-resource component of nontax revenue (see column [11]). The outcomes concerning the effect of the AGOA programme on the components of tax revenue suggest no significant of the programme on non-resource tax revenue (see column [5]), but influences positively resource tax revenue, the magnitude of that effect being 1.337 (see column [6]). Looking at the effect of the AGOA programme on the components of non-resource tax revenue, we find that the programme has exerted no significant effect on non-resource domestic tax revenue (see column [7]), but is associated with the fall in trade tax revenue (see column [8]). *Summing-up, the analysis suggests that over the full sample, the AGOA programme has been associated with a greater mobilization of resource revenue - especially resource tax revenue and non-tax revenue - at the expense of non-resource domestic tax revenue.*

[Insert Table 4, here]

We now turn to the outcomes provided in Table 4 (to test hypothesis 3). We focus here on the coefficients of the interaction variable (and of the variable “ECI” or the variable “ECIUN”) across all columns of the Table. Outcomes in the upper part of Table 4 show that the coefficient of the interaction variable “TREAT*ECI” is positive and significant at least at the 5% level when the dependent variable is measured by the total public revenue, resource-revenue, tax revenue, resource tax revenue, non-tax revenue, and resource non-tax revenue. These outcomes tend to suggest that the AGOA programme exerts a positive effect on each of these dependent variables in countries that diversify less their export products baskets. The interaction term is negative and significant at least at the 5% level when the dependent variable is the non-resource revenue, non-resource tax revenue, and the non-resource domestic tax revenue. This suggests that SSA AGOA beneficiaries tend to collect lower non-resource revenue as they diversify less their export product baskets (i.e., as they experience an increase in the level of the overall export product concentration). Specifically, these countries tend

to collect lower non-resource tax revenue, especially non-resource domestic tax revenue, as they diversify less their export product baskets. In other words, SSA AGOA beneficiaries that have a higher degree of the overall export product concentration tend to improve the mobilization of total public revenue, especially resource revenue, but they demobilize non-resource revenue. When considering the structure of total public revenue from the perspective of tax revenue versus non-tax revenue, we find that SSA AGOA beneficiaries that experience an increase in the degree of the overall export product concentration tend to experience an increase in both total tax revenue and non-tax revenue. These findings, however, reflect on the one hand, an increase in resource tax revenue, but a decrease in non-resource tax revenue, especially in non-resource domestic tax revenue. On the other hand, i.e., on the nontax revenue side, the outcomes reflect essentially an increase in resource tax revenue (as the effect on non-resource nontax revenue is significant only at the 10% level). Finally, export product diversification does not act as a mediator (at the 5% level) for the effect of the AGOA programme on trade tax revenue, non-resource nontax revenue. All these findings are confirmed by Figures 3 to 12 that are obtained based on the outcomes presented in the upper part of Table 4. The Figures depict at the 95 per cent confidence intervals, the marginal impact of the AGOA programme on each of the public revenue indicators used as dependent variable in the upper part of Table 4 (see columns [1] to [11]). We observe from Figure 3 that SSA AGOA beneficiaries that have a greater export product concentration tend to enjoy a higher total public revenue than those that tend to relatively diversify their export products. However, this pattern reflects differentiated patterns when considering the components of total public revenue that determine the structure of public revenue. When considering the structure of public revenue through the lens of resource revenue versus non-resource revenue (see Figures 4 and 5), we notice that as SSA beneficiaries of the AGOA programme further increase their export product concentration (e.g., on energy products), they tend to enjoy a higher resource revenue (see Figure 4), but a lower non-resource revenue (see Figure 5). When we consider the structure of public revenue through the lens of tax revenue versus nontax revenue (see Figures 6 and 11), we observe that as SSA beneficiaries of the AGOA programme experience a higher degree of export product concentration, they improve their collection of both total tax revenue (see Figure 6) and nontax revenue (see Figure 11). The effect of the AGOA programme on the components of total tax revenue and nontax revenue reveal, however, different slightly pictures than the ones observed in Figures 6 and 11. Looking at the components of total tax revenue, we find that SSA beneficiaries of the AGOA programme de-mobilize non-resource tax revenue as they experience a higher degree of export product concentration (see Figure 7), but they tend experience an increase in resource tax revenue as the degree of export product concentration increases (see Figure 8). Put differently, countries that diversify their export products experience a higher non-resource tax revenue, but a decrease in resource tax revenue (Figures 7 and 8). Interestingly, we observe for the components of non-resource tax revenue (see Figures 9 and 10) that the pattern observed in Figure 7 is reflected only in Figure 9: SSA AGOA beneficiaries experience a decline in non-resource domestic tax revenue mobilization as they further concentrate their export products basket, that is, the AGOA programme is positively associated with non-resource domestic tax revenue in countries that have achieved a relatively high degree of export product diversification, but leads to a decline in non-resource domestic tax revenue in countries that experience a higher degree of export product concentration.

Concurrently, export product diversification is not a mediator for the effect of the AGOA programme on trade tax revenue (another major component of non-resource tax revenue) – as there is no significant effect of the programme on trade tax revenue as countries changes their export product concentration level (see Figure 10). Taking up now the components of nontax revenue, we observe from Figure 12 that resource nontax revenue increases in SSA beneficiaries of the AGOA programme that further increase their degree of export product concentration. Meanwhile, Figure 13 shows that non-resource nontax revenue increases marginally as SSA beneficiaries of the AGOA programme experience a higher degree of export product concentration.

[Insert Figure 3, here], [Insert Figure 4, here]

[Insert Figure 5, here], [Insert Figure 6, here]

[Insert Figure 7, here] [Insert Figure 8, here]

[Insert Figure 9, here], [Insert Figure 10, here]

[Insert Figure 11, here], [Insert Figure 12, here], [Insert Figure 13, here]

We now consider the outcomes reported in the middle of Table 4, that is, the ones that allow us to use the UNCTAD's indicator of export product concentration to examine (in a robustness check analysis) the effect of the AGOA programme on beneficiary countries' public revenue structure. We observe that the interaction term of the variable "TREAT*ECIUN" is negative and significant at least at the 5% level when the dependent variable (i.e., the public revenue indicator) is measured by non-resource revenue, non-resource tax revenue, non-resource domestic tax revenue, and non-resource nontax revenue (see columns [3], [5], [7] and [8]). The interaction term is positive and significant at the 5% level when the public revenue indicator is resource tax revenue (see column [6]). The interaction term is not significant at the 10% level for the other public revenue indicators. We deduce that these outcomes align with those observed in the upper part of the Table (i.e., when using the IMF indicator of export product diversification). They suggest that the AGOA programme affects negatively non-resource revenue, non-resource tax revenue (including non-resource domestic tax revenue) and non-resource nontax revenue, as AGOA beneficiaries further improve export product concentration.

Finally, results reported in the lower part of Table 4 allow investigating whether manufactured export performance mediates the effect of the AGOA programme on public revenue indicators. These results align well with the ones obtained in the other parts of the same Table concerning whether export product diversification acts as a mediator for the effect of the AGOA programme on public revenue indicators. We observe that as SSA beneficiaries of the AGOA programme improve their share of manufactured exports in total merchandise exports, their total public revenue does not significantly change. However, the structure of total public revenue does change. In particular, resource revenue decreases, while non-resource revenue increases. Total tax revenue increases, but reflects an increase in non-resource tax revenue (especially non-resource domestic tax revenue – as there is no significant change in trade tax revenue), but no significant change in resource tax revenue. Non-tax revenue falls, reflecting essentially a decrease in resource nontax revenue, as non-resource nontax revenue does not change.

[Insert Table 5, here]

Table 5 show interesting outcomes (that help test hypothesis 4). The AGOA suspension has led to a significant fall in total public revenue, and notably of resource revenue, but non-resource revenue is not significantly affected. The AGOA suspension has resulted in a decrease in total public revenue by 3.26 percentage point, and resource-revenue by 3.23 percentage points in suspended countries relatively to SSA AGOA beneficiaries that were never suspended from the programme (see columns [1] to [3]). From the perspective of public revenue structure in terms of tax revenue versus nontax revenue, the AGOA suspension has led to a decrease in both tax revenue (by 1.47 percentage point relatively to countries in the control group) (see column [4]) and nontax revenue (by 3.79 percentage points compared to countries in the control group) (see column [9]). The negative effect of the AGOA suspension on tax revenue reflects yet a negative effect of the suspension on resource tax revenue (by 0.88 percentage point) (see column [6]), but a positive effect on non-resource tax revenue, although significant only at the 10% level – and with a lower magnitude than the negative effect on resource tax revenue (see column [5]). The absence of a significant effect of the AGOA suspension on non-resource domestic tax revenue and trade tax revenue (see columns [7] and [8]) confirms the lack of significant effect of the programme suspension on non-resource tax revenue. Finally, the observed negative effects of the AGOA suspension on both the resource and non-resource components of nontax revenue (see columns [10] and [11]) confirm the negative effect of the programme’s suspension on nontax revenue (see column [9]). The AGOA suspension has led to a higher negative effect on the resource component of nontax revenue (a decline by 1.54 percentage point) than on the non-resource component of nontax revenue (a decline by 0.605 percentage point). *Overall, the AGOA suspension has resulted in a fall in total public revenue, including resource revenue, and both tax revenue (notably resource tax revenue) and nontax revenue, including the resource and non-resource components of the latter.*

7. Conclusion

The present analysis examines the effect of the eligibility to the AGOA programme, and of the suspension of the benefits from this programme on total public revenue and its structure in beneficiary (and suspended) countries. The analysis has established several interesting findings. The eligibility to the AGOA programme has yet contributed to an improvement in total public revenue, but this reflects essentially an increase in resource revenue. Resource tax revenue and nontax revenue increase, but trade tax revenue decreases in these countries.

The analysis has also revealed that export product diversification and the manufactured export performance mediate the effect of the AGOA programme on public revenue indicators. We observe that SSA AGOA beneficiaries that have a higher degree of export product concentration experience an increase in total public revenue, especially resource revenue, but a fall in non-resource revenue. As they further concentrate their export products on a few commodities (e.g., resource-based products), these countries tend to mobilize both tax revenue (resource tax revenue at the expense of non-resource tax revenue, including non-resource domestic tax revenue) and non-tax revenue (especially resource tax revenue). Non-resource nontax revenue is marginally affected by the AGOA programme in SSA countries that improve or reduce their export product concentration levels. Likewise, SSA AGOA beneficiaries experience no significant change in trade tax revenue as they further increase or reduce export product concentration. Similar findings are obtained when we consider whether manufactured

export performance acts as a mediator for the effect of the AGOA programme on public revenue indicators. In fact, as beneficiaries of the AGOA programme improve their share of manufactured exports in total merchandise exports, they experience a higher non-resource revenue, but a fall in resource revenue. Total tax revenue increases in these countries, reflecting essentially an increase in non-resource tax revenue (especially non-resource domestic tax revenue) - as resource tax revenue is not significantly affected. Finally, as AGOA beneficiaries improve their manufactured export share of total merchandise exports, their nontax revenue decreases, reflecting essentially a decrease in resource nontax revenue. Finally, the analysis shows that the suspension of the benefits associated with the AGOA programme has resulted in a fall in total public revenue, including resource revenue, and both tax revenue (notably resource tax revenue) and nontax revenue, including the resource and non-resource components of the latter.

These findings show that non-reciprocal trade preferences influence the beneficiary countries' public revenue structure. Specifically, the AGOA programme has altered beneficiaries' public revenue structure, by specifically fostering the mobilization of resource-based tax revenue and resource-based nontax revenue in resource rich beneficiary countries. In the meantime, the suspension of the benefits from the AGOA programme results in a fall in total public revenue in suspended countries. The analysis points to the need for SSA beneficiaries of the AGOA programme to take advantage of this non-reciprocal trade preference to diversify their export products baskets, as export product diversification does not only promote economic growth (especially in low-income countries) (e.g., Eicher and Kuenzel, 2016), but it also contributes to improving public revenue, including non-resource based public revenues. The analysis also draws attention to the negative public revenue effect of the suspension of the AGOA programme.

Taking together, these findings show on the one hand, that taking advantage of non-reciprocal trade preferences by improving manufactured exports and diversifying export products, contributes to significantly enhancing the mobilization of public revenue, especially non-resource based public revenue. On the other hand, the AGOA suspension results in a significant fall in public revenue in the suspended countries, especially those that tend to export resource products under the AGOA programme. This underlines that the uncertainty surrounding the durability of non-reciprocal trade preferences (that can result in the temporary or definitive suspension of the preference) can alter the suspended countries' public revenue structure, reduce their total public revenue, and compromise the ability of these countries' governments to finance their development needs.

The analysis reveals that a non-renewal of the AGOA programme, which is set to expire on 30 September 2025 (as called for by President Joe Biden at the 21st AGOA Forum held on 24-26 July 2024 in Washington, DC) would not only affect beneficiary countries' exports and export structure (as demonstrated by the relevant literature), but also and more importantly lead result in a decline of public revenues.

References

- African Development Bank (AfDB) (2024). African Economic Outlook 2024. Driving Africa's Transformation - The Reform of the Global Financial Architecture. African Development Bank, Cote d'Ivoire. Report accessible online at <https://www.afdb.org/en/documents/african-economic-outlook-2024>
- Apeti, A.E., and Edoh, E.D. (2023). Tax revenue and mobile money in developing countries. *Journal of Development Economics*, 161, 103014.
- Apeti, A.E., and Edoh, E.D. (2024). Economic sanctions and sovereign debt default. *European Journal of Political Economy*, 85, 102571.
- Arezki, R., Fernandes, A.M., Merchán, F., Nguyen, H., and Reed, T. (2021). Natural resource dependence and monopolized imports. CESifo Working Paper No. 9254. CESifo, Munich, 2021.
- Balabanis, G. I. (2001). The Relationship Between Diversification and Performance in Export Intermediary Firms. *British Journal of Management*, 12(1), 67-84.
- Balima, H.W. (2020). Coups d'état and the cost of debt. *Journal of Comparative Economics*, 48(3), 509-528.
- Basri, M. C., Felix, M., Hanna, R., and Olken, B.A. (2021). Tax Administration versus Tax Rates: Evidence from Corporate Taxation in Indonesia. *American Economic Review*, 111(12), 3827-71.
- Baunsgaard, T., and Keen, M. (2010). Tax Revenue and (or?) Trade Liberalization. *Journal of Public Economics*, 94(9-10), 563-577.
- Besley, T., and Persson, T. (2013). Taxation and development. In: *Handbook of Public Economics*, vol. 5, Elsevier, pp. 51-110.
- Bird, R. M., Martinez-Vazquez, J. and Torgler, B. (2008). Tax Effort in Developing Countries and High-Income Countries: The Impact of Corruption, Voice and Accountability, *Economic Analysis and Policy*, 38(1), 55-71.
- Brenton, P., and Ikezuki, T. (2004). The Initial and Potential Impact of Preferential Access to the U.S. Market Under the African Growth and Opportunity Act. *World Bank Publications Volume 3262*. The World Bank, Washington, D.C.
- Brun J.F., Chambas, G., and Mansour, M. (2015). Tax Effort of Developing Countries: An Alternative Measure, In: *Financing Sustainable Development Addressing Vulnerabilities*, Chapter 11. Edited by Boussichas, M., and Guillaumont, P., Economica. FERDI.
- Cadot, O., Carrere, C., and Strauss-Kahn, V. (2011). Export Diversification: What's Behind the Hump? *Review of Economics and Statistics*, 93, 590-605.
- Cagé, J., and Gadenne, L. (2018). Tax revenues and the fiscal cost of trade liberalization, 1792–2006, 1792-2006. *Explorations in Economic History*, 70, 1-24.

Caliendo, M., and Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys*, 22(1), 31-72.

Chachu, D., and Nketiah-Amponsah, E. (2020). Investigating the fiscal resource curse: What is China got to do with it? WIDER Working Paper 2020/85. United Nations University-World Institute for Development Economics Research, (UNU-WIDER), Helsinki, Finland.

Collier, P. (2006). Is aid oil? An analysis of whether Africa can absorb more aid. *World Development*, 34 (9), 1482-1497.

Collier, P., and Venables, A. J. (2007). Rethinking trade preferences: How Africa can diversify its exports. *The World Economy*, 30(8), 1326-1345.

Cook, N. P. S., and Jones, J. C. (2015). The African Growth and Opportunity Act (AGOA) and export diversification. *The Journal of International Trade & Economic Development*, 24(7), 947-967.

Coulibaly, S., and Kassa, W. (2022). Trade Impact of the AGOA: An Aggregate Perspective. In *Africa in the New Trade Environment: Market Access in Troubled Times*; Zeufack, A., Coulibaly, A.S., Kassa, W., Eds.; World Bank Publications: Washington, DC, USA, 2022.

Crivelli, E. and Gupta, S. (2014). Resource blessing, revenue curse? Domestic revenue effort in resource-rich countries. *European Journal of Political Economy*, 35, 88-101.

Crivelli, E. and Gupta, S. (2018). IMF conditionality supports revenue collection: is it just tax rates? *Applied Economics Letter*, 25(12), 882-885.

Crivelli, E., and S. Gupta (2014). Resource Blessing, Revenue Curse? Domestic Revenue Effort in Resource-rich Countries. *European Journal of Political Economy* 35, 88-101.

Didia, D., Nica, M., and Yu, G. (2015). The gravity model, African Growth and Opportunity Act (AGOA) and US trade relations with sub-Saharan Africa. *Journal of International Trade & Economic Development*, 24(8), 1130-1151.

Driscoll, J. C., and Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4), 549-560.

Eicher, T.S., and Kuenzel, D.J. (2016). The elusive effects of trade on growth: Export diversity and economic take-off. *Canadian Journal of Economics*, 49(1), 264-295.

Edjigu, H., Hakobyan, S., and Kassa, W. (2023). Uncertainty in preferential trade agreements: impact of AGOA suspensions on exports. Policy Research Working Papers, 10424. The World Bank, Washington, DC.

Estefania-Flores, J., Furceri, D., Hannan, S.A., Ostry, J.D., and Rose, A.K. (2022). A measurement of aggregate trade restrictions and their economic effects. IMF Working Paper No. 2022/001, International Monetary Fund, Washington, D.C.

- Fernandes, A., Forero, A., Maemir, H., and Mattoo, A. (2023). Are trade preferences a Panacea? The export impact of the African Growth and Opportunity Act. *World Development*, 162, 106–114.
- Frazer, G., and Biesebroeck, J.V. (2010). Trade Growth under the African Growth and Opportunity Act. *Review of Economics and Statistics*, 92(1), 128–144.
- Funke, M., and Ruhwedel, R. (2001). Export variety and export performance: empirical evidence from East Asia. *Journal of Asian Economics*, 12, 493-505.
- Funke, M. and Ruhwedel, R. (2002). Export variety and export performance: empirical evidence for the OECD Countries. *Review of World Economics*, 138, 97-114.
- Gnangnon, S.K. (2018). Export Product Diversification and Public Revenue's Dependence on Resource Revenue. *International Economic Journal*, 32(3), 372-391.
- Gnangnon, S.K. (2021). Export product diversification, poverty and tax revenue in developing countries, *The Journal of International Trade & Economic Development*, 30(7), 957-987.
- Gnangnon, S.K., and Brun, J-F. (2019). Trade openness, tax reform and tax revenue in developing countries. *The World Economy*, 42(12), Special Issue: Global Policy Review, 3515-3536.
- Grogan, L. (2023). Manufacturing employment and women's agency: Evidence from Lesotho 2004–2014. *Journal of Development Economics*, 160, 102–951.
- Grossman, G. M., and Sykes, A. O. (2005). A Preference for Development: The Law and Economics of GSP. *World Trade Review*, 4(1), 41-67.
- Gutmann, J., Neuenkirch, M., and Neumeier, F. (2021). Sanctioned to death? The impact of economic sanctions on life expectancy and its gender gap. *Journal of Development Studies*, 57(1), 139-162.
- Gutmann, J., Neuenkirch, M., and Neumeier, F. (2023). The economic effects of international sanctions: An event study. *Journal of Comparative Economics*, 51(4), 1214-1231.
- Hainmueller, J. (2012). Entropy balancing for causal effects: a multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis*, 20(1), 25-46.
- Heckman, J., Ichimura, H., and Todd, P.E. (1997). Matching as an econometric evaluation estimator: evidence from evaluating a job training programme. *Review of Economic Studies*, 64(4), 605-654.
- Henn, C., Papageorgiou, C., and Spatafora, N. (2013). Export quality in developing countries (IMF Working Paper 13/108). Washington, DC: International Monetary Fund (IMF).
- Henn, C., Papageorgiou, C., and Spatafora, N. (2015). Export quality in advanced and developing economies: Evidence from a new dataset (WTO Working Paper, ERSD-2015-02). Geneva, Switzerland: World Trade Organization (WTO).
- Henn, C., Papageorgiou, C., Romero, J.M., and Spatafora, N. (2020). Export Quality in Advanced and Developing Economies: Evidence from a New Data Set. *IMF Economic Review*, 68, 421-451.

- Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *The Stata Journal*, 7(3), 281-312.
- Iacus, S.M., King, G., and Porro, G. (2012). Causal inference without balance checking: coarsened exact matching. *Political Analysis*, 20(1), 1-24.
- Kaplinsky, R., and Morris, M. (2015). Thinning and thickening: Productive sector policies in the era of global value chains. *European Journal of Development Research*, 27, 625-645.
- Kaufmann, D., and Kraay, A. (2023). *Worldwide Governance Indicators, 2023 Update* (www.govindicators.org), Accessed on 10/19/2023.
- Khattry, B., and Rao, J.M. (2002). Fiscal Faux Pas?: An analysis of the revenue implications of trade liberalization. *World Development*, 30(8), 1431-1444.
- Knack, S. (2009). Sovereign rents and quality of tax policy and administration. *Journal of Comparative Economics*, 37, 359-371.
- Knebelmann, J. (2017). Natural resources' impact on government revenues. WIDER Working Paper 2017/10. United Nations University-World Institute for Development Economics Research, (UNU-WIDER), Helsinki, Finland.
- Kullback, S. (1997). *Information Theory and Statistics*. Courier Corporation.
- Lall, S. (2005). FDI, AGOA and Manufactured Exports by a Landlocked, Least Developed African Economy: Lesotho. *Journal of Development Studies*, 41, 998-1022.
- Lartey, A. (2024). Government responses to oilfield discoveries: Impact of resource wealth on non-resource tax revenues. *Journal of Government and Economics*, 15, 100119.
- Marcus, J. (2013). The effect of unemployment on the mental health of spouses—evidence from plant closures in Germany. *Journal of Health Economics*, 32(3), 546-558.
- Mattoo, A., Roy, D., and Subramanian, A. (2003). The Africa Growth and Opportunity Act and its Rules of Origin: Generosity Undermined? *World Economy*, 26(6), 829–851.
- Mawejje, J. (2019). Natural resources governance and tax revenue mobilization in sub-Saharan Africa: The role of EITI. *Resource Policy*, 62, 176-183.
- Mevel, S., Lewis, Z.A., Kimenyi, M.S., Karingi, S., and Kamau, A. (2013). *The African Growth and Opportunity Act - An Empirical Analysis of the Possibilities Post-2015*. Africa Growth Initiative at Brookings (Washington, D.C.) and United Nations Economic Commission for Africa (Addis Ababa, Ethiopia). Document accessible online at: <https://www.brookings.edu/wp-content/uploads/2016/06/130729-AGO-2013WEBFINAL.pdf>
- Minondo, A. (2020). Export revenue and quality: Firm-level evidence from developing countries. *Review of Development Economics*, 24(2), 471-484.

- Mohtadi, H., Ross, M. L., Ruediger, S., & Jarrett, U. (2017). Does oil hinder transparency? University of Wisconsin and UCLA (Working Paper). Accessible online at: http://www.michaelross.info/papers/working/Does%20Oil%20Hinder%20Transparency%208_2_17.pdf
- Moore, M. (1998). Death without taxes: democracy, state capacity and aid dependence in the fourth world. In: Robinson, M., White, G. (Eds.), *The Democratic Development State*. Oxford University Press, Oxford.
- Moore, M. (2007). How does taxation affect the quality of governance. IDS Working Paper 280. Brighton, United Kingdom.
- Morrissey, O., Von Haldenwang, C., Von Schiller, A., Ivanyna, M., and Bordon, I. (2016). Tax Revenue Performance and Vulnerability in Developing Countries. *The Journal of Development Studies*, 52(12), 1689-1703.
- Neuenkirch, M., and Neumeier, F. (2016). The impact of US sanctions on poverty. *Journal of Development Economics*, 121, 110-119.
- Njikam, O. (2017). Export market destination and performance: Firm-level evidence from Sub-Saharan Africa. *Journal of African Trade*, 4(1-2), 1-19.
- Ogrokhina, O., and Rodriguez, C.M. (2019). The effect of inflation targeting and financial openness on currency composition of sovereign international debt. *Journal of International Money and Finance*, 97, 1-18.
- Ogrokhina, O., and Rodriguez, C.M. (2024). Inflation targeting and capital flows: A tale of two cycles in developing countries. *Journal of International Money and Finance*, 146, 103121.
- Olarreaga, M., and Özden, Ç. (2005). AGOA and Apparel: Who Captures the Tariff Rent in the Presence of Preferential Market Access? *The World Economy*, 28(1), 63-77.
- Otobe, N. (2015). Export-Led Development, Employment and Gender in the Era of Globalization. Employment Working Paper. Geneva: International Labour Office, Geneva, Switzerland.
- Phelps, N.A., Stillwell, J.C., and Wanjiru, R. (2009). Broken Chain? AGOA and Foreign Direct Investment in the Kenyan Clothing Industry. *World Development*, 37, 314–325.
- Portugal-Perez, A. (2008). The Costs of Rules of Origin in Apparel: African Preferential Exports to the US and the EU. World Bank Policy Research Working Paper (4721). The World Bank, Washington, D.C.
- Rosenbaum, P.R., and Rubin, D.B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
- Seyoum, B., and Abraham, R. (2022). US Trade Preference and Export Performance of Sub-Saharan Africa (SSA): Evidence from the African Growth and Opportunity Act (AGOA). *World Trade Review*, 21, 573–596.

Solano, L. V. L., Brümmer, B., Engler, A., and Otter, V. (2019). Effects of intra- and inter-regional geographic diversification and product diversification on export performance: Evidence from the Chilean fresh fruit export sector. *Food Policy*, 86, Article 101730.

Sorgho, Z. (2024). US suspension policy from the African Growth and Opportunity Act (AGOA): An estimation of the missing exports from sub-Saharan Africa. *South African Journal of Economics*, <https://doi.org/10.1111/saje.12387> (first published on 06 October 2024).

Staritz, C. (2012). Apparel Exports-Still a Path for Industrial Development? Dynamics in Apparel Global Value Chains and Implications for Low-Income Countries; OFSE Working Paper, No. 34; Austrian Foundation for Development Research (OFSE): Vienna, Austria.

Tadesse, B. (2024). The Impacts of the African Growth Opportunity Act on the Economic Performances of Sub-Saharan African Countries: A Comprehensive Review. *Sci*, 6,14. <https://doi.org/10.3390/sci6010014>

Tadesse, B., and Fayissa, B. (2008). The impact of African growth and opportunity act (AGOA) on U.S. imports from Sub-Saharan Africa (SSA). *Journal of International Development*, 20(7), 920-941.

Taylor, R.S. (2024). The fiscal effects of natural resource dependency in sub-Saharan Africa. *Natural Resources Forum*, First published: 13 January 2024 <https://doi.org/10.1111/1477-8947.12400>

UNCTAD (2023). The African Growth and Opportunities Act: A Review of Its Benefits, Limitations, Utilization, and Results. United Nations Conference on Trade and Development, Geneva, Switzerland.

UNECA (2015). Economic Report on Africa, 2015. Industrialization through trade. United Nations Economic Commission for Africa Publication, Sales no.: E.15.II.K.2, Addis Ababa, Ethiopia.

United States Congress (2000). Trade and Development Act of 2000. (Washington DC).

USITC (2023). African Growth and Opportunity Act (AGOA): Program Usage, Trends, and Sectoral Highlights. USITC Publication 5419. United States International Trade Commission, Washington, DC. Available online: <https://www.usitc.gov/sites/default/files/publications/332/pub5419.pdf> (accessed on 15 August 2023).

USTR (2022). 2022 Biennial Report on the Implementation of the African Growth and Opportunity Act. Office of the United States Trade Representative, Washington, D.C., June 2022.

USTR (2024). 2024 Biennial Report on the Implementation of the African Growth and Opportunity Act. United States Trade Representative (USTR Office), June 28, 2024. Accessible online at: <https://ustr.gov/sites/default/files/2024%20AGOA%20Biennial%20Report%206-27-2024%20PDF.pdf>

World Bank (2024). Transforming Education for Inclusive Growth. *Africa's Pulse*, No. 30 (October 2024). World Bank, Washington, DC.

World Trade Organization (WTO) (2023). United States' African Growth and Opportunity Act. Report of the Government of the United States for the Year 2020 under the Decision of 30 November 2015. WTO Document WT/L/1173 of 7 November 2023. World Trade Organization, Geneva, Switzerland.

Xuefeng, Q., and Yaşar, M. (2016). Export Market Diversification and Firm Productivity: Evidence from a Large Developing Country. *World Development*, 82, 28-47.

Zhao, Q., and Percival, D. (2017). Entropy Balancing is Doubly Robust. *Journal of Causal Inference*, 5(1), 2017, pp. 2016-0010.

TABLES and APPENDICES

Table 1: Effect of goods exports under the AGOA program on public revenue
Estimator. FEDK

| <i>Over the full sample of SSA countries (eligible for the AGOA programme)</i> | | | | | | | | | | | |
|---|----------------------|-----------------------|------------------------|----------------------|------------------------|-----------------------|----------------------|------------------------|------------------------|----------------------|------------------------|
| Variables | TOTREV | RESREV | NRESREV | TAXREV | NRTAX | RTAX | NRDOMTAX | TRTAX | NTAX | RNTAX | NRNTAX |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| SHEXPAGOA | 0.682*** (0.111) | 0.829*** (0.0949) | -0.0629* (0.0303) | 0.356*** (0.114) | -0.0713 (0.0663) | 0.460*** (0.0751) | 0.0422 (0.145) | 0.224** (0.0992) | 0.672*** (0.0910) | 0.398*** (0.109) | 0.0244*** (0.00700) |
| SHOEXP | 0.116*** (0.0235) | 0.0830*** (0.0218) | 0.0358*** (0.00835) | 0.0748** (0.0358) | 0.0330*** (0.0111) | 0.0400 (0.0233) | 0.0380** (0.0148) | 0.00831 (0.0112) | 0.0611*** (0.0165) | -0.0156 (0.0311) | 0.0195*** (0.00624) |
| Observations | 673 | 479 | 476 | 627 | 585 | 544 | 502 | 593 | 579 | 428 | 449 |
| Countries | 42 | 32 | 32 | 41 | 42 | 40 | 39 | 41 | 42 | 34 | 34 |
| Within R ² | 0.2948 | 0.4214 | 0.2766 | 0.1897 | 0.1350 | 0.2164 | 0.1290 | 0.0729 | 0.3210 | 0.2319 | 0.1251 |
| <i>Over sub-sample of resource-rich SSA countries (eligible for the AGOA programme)</i> | | | | | | | | | | | |
| SHEXPAGOA | 0.718*** (0.0909) | 0.816*** (0.0945) | -0.0205 (0.0377) | 0.314*** (0.0983) | -0.0979*** (0.0242) | 0.464*** (0.0833) | -0.00652 (0.0556) | 0.0318** (0.0151) | 0.701*** (0.100) | 0.543*** (0.102) | 0.00462 (0.0105) |
| SHOEXP | 0.106*** (0.0251) | 0.113*** (0.0271) | 0.0136 (0.00841) | 0.0718 (0.0457) | -0.000664 (0.0106) | 0.0729* (0.0403) | -0.0150 (0.0127) | -0.0123** (0.00587) | 0.0794*** (0.0221) | -0.0221 (0.0431) | 0.0190** (0.00755) |
| Observations | 278 | 242 | 239 | 237 | 262 | 213 | 192 | 230 | 259 | 166 | 186 |
| Countries | 15 | 13 | 13 | 14 | 15 | 13 | 14 | 15 | 15 | 12 | 12 |
| Within R ² | 0.3506 | 0.4636 | 0.1938 | 0.1474 | 0.2594 | 0.2579 | 0.3103 | 0.1402 | 0.3550 | 0.3511 | 0.0835 |
| <i>Over sub-sample of non-resource rich SSA countries (eligible for the AGOA programme)</i> | | | | | | | | | | | |
| SHEXPAGOA | 0.822** (0.341) | 0.0418 (0.0444) | 0.00188 (0.149) | 0.730* (0.365) | 1.481 (0.865) | 0.00952* (0.00489) | 1.665** (0.711) | 0.758 (0.491) | 0.103 (0.103) | -0.00786 (0.0143) | 0.0806** (0.0308) |
| SHOEXP | 0.164*** (0.0488) | 0.0309*** (0.0102) | 0.115*** (0.0126) | 0.103** (0.0469) | 0.0801* (0.0410) | 0.00216* (0.00122) | 0.0706* (0.0344) | 0.0308 (0.0644) | 0.0599*** (0.00974) | 0.0179* (0.00907) | 0.0213** (0.00800) |
| Observations | 395 | 237 | 237 | 390 | 323 | 331 | 310 | 363 | 320 | 262 | 263 |
| Countries | 27 | 19 | 19 | 27 | 27 | 27 | 25 | 26 | 27 | 22 | 22 |
| Within R ² | 0.3838 | 0.1768 | 0.5450 | 0.3098 | 0.2912 | 0.0518 | 0.3052 | 0.1934 | 0.2370 | 0.1299 | 0.2999 |

Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust standard errors are in parenthesis.

Table 2a: Covariates balance for the dataset that allows investigating the effect of the AGOA programme on public revenue indicators

| | Target Value | Unbalanced | | Balanced | |
|--------------------------|--------------|------------|-------------------------|----------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) |
| | | Value | Standardized difference | Value | Standardized difference |
| Log(GDPC) _{t-1} | 7.17 | 7.427 | 0.2698 | 7.1698 | 0 |
| INST _{t-1} | -1.213 | -1.395 | -0.103 | -1.213 | 2.50e-16 |
| PRIGHT _{t-1} | 4.012 | 4.331 | 0.154 | 4.012 | 4.30e-16 |

Table 2b: Covariates balance for the dataset that allows investigating the effect of the AGOA suspension on public revenue indicators

| | Target Value | Unbalanced | | Balanced | |
|--------------------------|--------------|------------|-------------------------|----------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) |
| | | Value | Standardized difference | Value | Standardized difference |
| Log(GDPC) _{t-1} | 6.753 | 7.155 | 0.437 | 6.753 | -9.67e-16 |
| INST _{t-1} | -2.621 | -1.258 | 0.997 | -2.621 | 0 |
| PRIGHT _{t-1} | 5.952 | 4.046 | -1.065 | 5.952 | 0 |

Table 3: Effect of the AGOA programme on public revenue*Estimator:* FEDK (based on the Entropy-Balanced sample)

| <i>Over the full sample of SSA countries eligible for the AGOA program</i> | | | | | | | | | | | |
|--|---------|----------|---------|---------|---------|----------|----------|-----------|----------|---------|---------|
| Variables | TOTREV | RESREV | NRESREV | TAXREV | NRTAX | RTAX | NRDOMTAX | TRTAX | NTAX | RNTAX | NRNTAX |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| TREAT | 0.878** | 2.411*** | -0.0534 | -0.0940 | -0.309 | 1.337*** | -0.356 | -0.809*** | 2.269*** | 1.522* | -0.139 |
| | (0.346) | (0.616) | (0.419) | (0.260) | (0.428) | (0.412) | (0.394) | (0.199) | (0.377) | (0.765) | (0.243) |
| Observations | 1,207 | 851 | 834 | 1,157 | 1,110 | 1,055 | 963 | 1,097 | 1,090 | 804 | 827 |
| Countries | 72 | 55 | 55 | 71 | 71 | 69 | 66 | 71 | 71 | 59 | 59 |
| Within R ² | 0.3168 | 0.0823 | 0.3682 | 0.3940 | 0.5001 | 0.0734 | 0.5697 | 0.1773 | 0.0898 | 0.0341 | 0.1943 |

Note: *p-value<0.1; **p-value<0.05; ***p-value<0.01. Robust standard errors are in parenthesis.

Table 4: Export product diversification and manufactured exports as mediators for the effect of the AGOA program on public revenue_Over the full sample of SSA countries eligible for the AGOA program

Estimator: FEDK (based on the Entropy-Balanced sample)

| <i>Mediator: Export product concentration (ECI)</i> | | | | | | | | | | | |
|---|------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|-----------------------|
| Variables | TOTREV | RESREV | NRESREV | TAXREV | NRTAX | RTAX | NRDOMTAX | TRTAX | NTAX | RNTAX | NRNTAX |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| TREAT*ECI | 1.585*** (0.332) | 2.664*** (0.629) | -0.419** (0.158) | 0.764** (0.277) | -0.587*** (0.0968) | 1.558*** (0.322) | -0.437*** (0.131) | 0.00494 (0.317) | 2.312*** (0.277) | 1.432** (0.589) | 0.589* (0.285) |
| TREAT | -4.839** (2.121) | -8.509*** (2.621) | 1.356* (0.767) | -2.891** (1.234) | 2.376*** (0.270) | -4.874*** (1.189) | 1.584*** (0.475) | -0.447 (1.506) | -7.208*** (1.321) | -4.163* (2.063) | -2.702* (1.269) |
| ECI | -1.967*** (0.561) | -0.980* (0.458) | 0.0205 (0.145) | -1.197** (0.517) | 0.385*** (0.0850) | -0.112* (0.0564) | 0.315*** (0.0716) | -0.880*** (0.221) | -1.051*** (0.316) | -0.0754 (0.0505) | -0.938*** (0.111) |
| Observations | 746 | 507 | 498 | 723 | 704 | 668 | 648 | 687 | 693 | 482 | 501 |
| Countries | 58 | 40 | 40 | 57 | 57 | 55 | 55 | 57 | 57 | 42 | 43 |
| Within R ² | 0.6296 | 0.3272 | 0.6848 | 0.6194 | 0.6991 | 0.2991 | 0.7008 | 0.3685 | 0.3652 | 0.2230 | 0.5258 |
| <i>Mediator: Export product concentration (ECIUN)</i> | | | | | | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| TREAT*ECIUN | -1.705 (3.066) | 1.545 (2.623) | -6.899*** (1.806) | -0.314 (2.945) | -3.739*** (1.213) | 4.542** (1.825) | -1.947** (0.760) | 0.775 (1.349) | 0.855 (1.971) | 1.799 (3.279) | -1.487*** (0.508) |
| TREAT | 1.930 (1.309) | 1.403 (1.216) | 3.510*** (1.205) | 0.0788 (1.356) | 1.640*** (0.442) | -0.927 (0.726) | 0.575 (0.469) | -1.181 (0.831) | 2.008** (0.773) | 0.803 (1.236) | 0.624 (0.379) |
| ECIUN | 5.503 (3.509) | 9.130*** (2.963) | 3.555* (1.736) | 0.564 (2.474) | 1.339 (1.012) | 0.886 (1.480) | -0.167 (1.000) | 0.230 (1.038) | 5.167** (2.293) | 7.388** (3.009) | -0.0867 (0.943) |
| Observations | 1,207 | 851 | 834 | 1,157 | 1,110 | 1,055 | 963 | 1,097 | 1,090 | 804 | 827 |
| Countries | 72 | 55 | 55 | 71 | 71 | 69 | 66 | 71 | 71 | 59 | 59 |
| Within R ² | 0.3231 | 0.1193 | 0.3796 | 0.3941 | 0.5047 | 0.0947 | 0.5712 | 0.1779 | 0.1059 | 0.0748 | 0.1978 |
| <i>Mediator: Share of manufactured exports in total merchandise exports</i> | | | | | | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| TREAT*SHEXPM | -0.0125 (0.0125) | -0.116*** (0.0275) | 0.0944*** (0.0325) | 0.0462*** (0.0159) | 0.0590*** (0.0177) | -0.00462 (0.00330) | 0.0478*** (0.0144) | 0.00632 (0.00890) | -0.0717*** (0.0187) | -0.0964*** (0.0311) | 0.00496 (0.00588) |
| TREAT | 1.439** (0.533) | 3.586*** (0.515) | -1.526*** (0.458) | -0.786 (0.484) | -1.290** (0.488) | 0.447*** (0.0863) | -1.334** (0.536) | -0.597* (0.309) | 3.165*** (0.547) | 1.942*** (0.461) | 0.237 (0.223) |
| SHEXPM | -0.0643*** (0.0136) | 0.000687 (0.0143) | -0.0922*** (0.0195) | -0.0418*** (0.0146) | -0.0498*** (0.0149) | -0.000221 (0.00196) | -0.0550*** (0.0152) | -0.00656** (0.00316) | -0.0226 (0.0140) | 0.00764 (0.0208) | -0.0123* (0.00707) |

| | | | | | | | | | | | |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Observations | 922 | 617 | 612 | 884 | 835 | 792 | 752 | 855 | 826 | 597 | 616 |
| Countries | 68 | 52 | 52 | 67 | 67 | 65 | 60 | 66 | 67 | 55 | 56 |
| Within R ² | 0.3826 | 0.1125 | 0.4933 | 0.4393 | 0.5790 | 0.0044 | 0.6118 | 0.1103 | 0.1152 | 0.0907 | 0.1301 |

Note: **p*-value<0.1; ***p*-value<0.05; ****p*-value<0.01. Robust standard errors are in parenthesis.

Table 5: Effect of the suspension of the benefit from the AGOA program on public revenue

Estimator. FEDK (based on the Entropy-Balanced sample)

| <i>Over the full sample of SSA countries suspended from the AGOA program</i> | | | | | | | | | | | |
|--|----------------------|----------------------|------------------|---------------------|-------------------|---------------------|------------------|-------------------|----------------------|---------------------|---------------------|
| Variables | TOTREV | RESREV | NRESREV | TAXREV | NRTAX | RTAX | NRDOMTAX | TRTAX | NTAX | RNTAX | NRNTAX |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| TREAT | -3.257*** (0.683) | -3.233*** (1.001) | 0.318 (0.292) | -1.473** (0.527) | 0.663* (0.357) | -0.878** (0.382) | 0.348 (0.485) | -0.124 (0.113) | -3.786*** (0.994) | -1.540** (0.722) | -0.605** (0.285) |
| Observations | 642 | 458 | 455 | 598 | 556 | 519 | 474 | 564 | 550 | 410 | 429 |
| Countries | 42 | 32 | 32 | 40 | 41 | 39 | 38 | 40 | 41 | 33 | 33 |
| Within R ² | 0.8731 | 0.3035 | 0.9272 | 0.8998 | 0.9494 | 0.2141 | 0.9278 | 0.7813 | 0.4513 | 0.3064 | 0.6680 |

Note: **p*-value<0.1; ***p*-value<0.05; ****p*-value<0.01. Robust standard errors are in parenthesis.

Appendix 1: Definition and source of variables

| Variables | Definition | Source |
|-----------|--|---|
| TOTREV | The share of total public revenue (excluding grants and social contributions) in percentage of GDP. | UNU-WIDER Government Revenue Dataset - Version 2023 (https://www.wider.unu.edu/project/grd-government-revenue-dataset) |
| RESREV | The share of resource revenue in percentage of GDP. Resource revenue are natural resources-based revenues ³⁰ , and includes natural resources-based tax revenue and natural resources-based non-tax revenue. | UNU-WIDER Government Revenue Dataset - Version 2023 |
| NRESREV | The share of non-resource revenue in percentage of GDP. It is computed as the difference between the indicators “TOTREV” and “RESREV” described above. | Author’s calculation based on UNU-WIDER Government Revenue Dataset - Version 2023 |
| TAXREV | The share of total tax revenue (excluding social contributions) in percentage of GDP. | UNU-WIDER Government Revenue Dataset - Version 2023 |
| RTAX | The share of resource tax revenue in percentage of GDP. | UNU-WIDER Government Revenue Dataset - Version 2023 |
| NRTAX | This is the share of non-resource tax revenue in percentage of GDP. Non-resource tax revenue is the difference between total tax revenue (excluding social contributions) and resource tax revenue, the latter being the tax revenue collected on natural resources. | Author’s calculation based on UNU-WIDER Government Revenue Dataset - Version 2023 |
| TRTAX | This is the share of (total) trade tax revenue (i.e., tax revenue on international trade) in percentage of GDP. | Author’s calculation based on UNU-WIDER Government Revenue Dataset - Version 2023 |
| NRDOMTAX | The share of non-resource domestic tax revenue in percentage of GDP. Non-resource domestic tax revenue is the sum of non-resource direct tax revenue (excluding social contributions) and non-resource indirect tax revenue. | Author’s calculation based on UNU-WIDER Government Revenue Dataset - Version 2023 |
| NTAX | The share of non-tax revenue in percentage of GDP. Non-tax revenue is the difference between total public revenue (excluding social contribution) and (total) non-resource tax revenue (denoted “NRTAX” above). It includes resource non-tax revenue and non-resource non-tax revenue (i.e., non-tax revenue collected from sources other than natural resources). | Author’s calculation based on UNU-WIDER Government Revenue Dataset - Version 2023 |
| RNTAX | This is the resource component of non-tax revenue. It is the share of resource non-tax revenue in percentage of GDP. | Author’s calculation based on UNU-WIDER Government Revenue Dataset - Version 2023 |
| NRNTAX | This is the non-resource component of non-tax revenue. It is the share of non-resource non-tax revenue in percentage of GDP. | |
| SHEXPAGOA | The share (in percentage of GDP) of goods exports to the United States under the AGOA program. | Author’s calculation. Data on the value of goods exports (current US\$) under the AGOA program were extracted from the AGOA.info website (https://agoa.info/data/trade.html) |

³⁰ Natural resources include a significant component of economic rent, primarily from extractives, including oil and mining activities.

| | | |
|--------|--|---|
| | | Data on the GDP indicator (current US\$) were extracted from the World Bank's World Development Indicators (WDI). |
| SHOEXP | This is the share (in percentage of GDP) of other export products. For a given country, the value (current US\$) of other goods exports is obtained as the difference between the value of the total goods exports (current US\$) by that country to the world and the value of the goods exported by the same country to the United States under the AGOA program. | <p>Author's calculation.</p> <p>Data on the value of goods exports (current US\$) under the AGOA program were extracted from the AGOA.info website (https://agoa.info/data/trade.html)</p> <p>Data on the value of the total goods exports (current US\$) were collected from the United Nations Conference on Trade and Development (UNCTAD)'s data center accessible online at: https://unctadstat.unctad.org/datacentre/</p> |
| ECI | This is the index of the overall export product concentration. It was developed by the IMF, and computed using the Theil index, following the definitions and methods used in Cadot et al. (2011). The overall Theil index of export product concentration is the sum of the intensive and extensive components of export product concentration. Indeed, export product diversification can occur either over product narrowly defined or trading partners. It can be broken down into the extensive and intensive margins of concentration. Extensive export diversification reflects an increase in the number of new export products or trading partners, while intensive export diversification considers the shares of export volumes across active products or trading partners. The calculation of the indicator has relied on a classification of products into "Traditional", "New", or "Non-Traded" products categories. Higher values the index "ECI" indicate a greater overall export product concentration, and lower values show a tendency for a greater (overall) export product diversification. | <p>Author's calculation based on data from the International Monetary Fund's Diversification Toolkit (see: https://www.imf.org/external/np/res/dfdimf/diversification.htm)</p> <p>Details on the methodology used to calculate this index can be found in Henn et al. (2013, 2015, 2020).</p> |
| ECIUN | This is the Herfindahl-Hirschmann Index of export product concentration computed by the UNCTAD, using export product data at the three-digit SITC, Rev. 3 level. Higher values this index reflect a greater export product concentration, while lower values of this index show a greater export product diversification. | <p>United Nations Conference on Trade and Development (UNCTAD) database accessible online at: https://unctadstat.unctad.org/datacentre/</p> |
| SHEXPM | Share (in percentage) of manufactured exports in total merchandise exports | <p>Author's calculation based on the indicators of manufactured exports (current \$US) and total merchandise exports (current \$US). Both indicators were extracted from the UNCTAD database accessible online at:</p> |

| | | |
|--------|--|---|
| | | https://unctadstat.unctad.org/datacentre/ |
| MATR | This is the Measure of Aggregate Trade Restrictions. It has been constructed using data from the International Monetary Fund (IMF)'s Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) and is well described in Estefania-Flores et al. (2022). Compared to other existing trade policy indicators, it covers a larger annual period from 1949 onwards, and additionally provides granular measures of different facets of trade protectionism, including tariffs, non-tariff barriers, and restrictions on requiring, obtaining, and using foreign exchange for current transactions. | Data is available online at: https://sites.google.com/view/matr/ (see Estefania-Flores et al., 2022). |
| GDPC | Real per capita Gross Domestic Product (constant 2015 US\$) | WDI |
| VAMAN | Share of the value added in manufacturing in percentage of GDP. | WDI |
| INFL | The variable "INFL" has been calculated as follows: $INFL = \text{sign}(INFLATION) * \log(1 + INFLATION)$ (2), where "INFLATION" represents the annual inflation rate (not expressed in percentage), and $ INFLATION $ referring to the absolute value of the inflation rate. The annual inflation rate is based on consumer price index, with missing values being replaced with values of the GDP Deflator. | Author's calculation based on data from the WDI. |
| POPGR | The annual population growth rate (in percentage) | WDI |
| PRIGHT | This is the index of political rights. It captures the extent of free and fair elections, political pluralism and participation, and a functioning government (https://ourworldindata.org/grapher/political-rights-score-fh). Its values range from 1 to 7, with lower scores indicating better political rights. | Political Freedom Database accessible online at: https://freedomhouse.org/report/freedom-world |
| INST | This is the variable capturing the institutional and governance quality in the beneficiary countries of GSP programs. It has been computed by extracting the first principal component (based on factor analysis) of the following six indicators of governance. These indicators are respectively: political stability and absence of violence/terrorism; regulatory quality; rule of law; government effectiveness; voice and accountability, and corruption. Higher values of the index "INST" are associated with better governance and institutional quality, while lower values reflect worse governance and institutional quality. | Data on the components of "INST" variables has been extracted from Worldwide Governance Indicators (see Kaufmann and Kraay, 2023). See online at: https://info.worldbank.org/governance/wgi/ |

Appendix 2a: Descriptive statistics on variables over the treatment group (TG1) of the 42 SSA countries eligible for the AGOA program

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|-----------|--------------|----------|--------------------|---------|-----------|
| TOTREV | 732 | 18.000 | 10.076 | 3.723 | 66.203 |
| RESREV | 511 | 4.584 | 7.700 | 0.000 | 40.756 |
| NRESREV | 511 | 12.785 | 6.106 | 3.248 | 35.645 |
| TAXREV | 676 | 14.428 | 8.237 | 3.057 | 60.946 |
| NRTAX | 632 | 12.474 | 7.000 | 3.057 | 60.946 |
| RTAX | 571 | 1.334 | 4.412 | 0.000 | 36.349 |
| NRDOMTAX | 552 | 13.238 | 7.281 | 3.057 | 60.946 |
| TRTAX | 639 | 3.280 | 4.491 | 0.000 | 40.861 |
| NTAX | 632 | 5.279 | 7.215 | 0.015 | 40.756 |
| RNTAX | 457 | 2.398 | 5.831 | 0.000 | 40.756 |
| NRNTAX | 483 | 1.653 | 2.134 | 0.000 | 25.698 |
| SHEXPAGOA | 673 | 1.645 | 4.588 | 0.000 | 32.176 |
| SHOEXP | 673 | 21.525 | 16.030 | 0.576 | 129.371 |
| ECI | 474 | 4.226 | 1.136 | 0.000 | 6.331 |
| ECIUN | 732 | 0.466 | 0.218 | 0.113 | 0.964 |
| SHEXPM | 595 | 22.352 | 23.158 | 0.00007 | 96.225 |
| MATR | 706 | 13.163 | 3.535 | 3.000 | 19.000 |
| GDPC | 732 | 1771.531 | 2191.308 | 251.378 | 19481.650 |
| INFL | 732 | 0.078 | 0.153 | -0.169 | 2.482 |
| VAMAN | 732 | 9.737 | 4.759 | 0.233 | 29.560 |
| POPGR | 732 | 2.603 | 0.896 | -0.402 | 13.247 |
| INST | 642 | -1.418 | 1.260 | -4.039 | 2.109 |
| PRIGHT | 732 | 4.322 | 1.688 | 1.000 | 7.000 |

Appendix 2b: Descriptive statistics on variables over the control group (CG1) of the 33 non-SSA IDA countries (that are not eligible for the AGOA program)

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|-----------|--------------|--------|--------------------|---------|---------|
| TOTREV | 475 | 20.427 | 10.648 | 1.983 | 80.791 |
| RESREV | 323 | 4.026 | 11.543 | 0.000 | 79.110 |
| NRESREV | 323 | 16.799 | 8.617 | 1.680 | 59.375 |
| TAXREV | 462 | 14.764 | 6.290 | 1.908 | 51.753 |
| NRTAX | 458 | 13.791 | 5.974 | 1.191 | 32.615 |
| RTAX | 443 | 0.552 | 3.180 | 0.000 | 45.325 |
| NRDOMTAX | 394 | 13.944 | 6.104 | 1.154 | 32.615 |
| TRTAX | 428 | 2.792 | 2.299 | 0.099 | 11.760 |
| NTAX | 458 | 6.549 | 10.254 | 0.000 | 79.506 |
| RNTAX | 329 | 3.325 | 10.514 | 0.000 | 79.110 |
| NRNTAX | 327 | 3.489 | 4.027 | 0.000 | 34.886 |
| SHEXPAGOA | 443 | 0.000 | 0.000 | 0.000 | 0.000 |
| SHOEXP | 14 | 28.378 | 10.020 | 16.526 | 49.822 |
| ECI | 272 | 3.613 | 1.215 | 0.000 | 5.991 |
| ECIUN | 475 | 0.371 | 0.182 | 0.119 | 0.912 |

| | | | | | |
|--------|-----|----------|----------|---------|-----------|
| SHEXPM | 327 | 37.156 | 31.262 | 0.0031 | 97.272 |
| MATR | 460 | 11.859 | 4.644 | 3.000 | 19.000 |
| GDPC | 475 | 2794.263 | 2321.447 | 373.044 | 11178.860 |
| INFL | 475 | 0.067 | 0.101 | -0.192 | 1.253 |
| VAMAN | 475 | 9.529 | 6.052 | 0.357 | 25.320 |
| POPGR | 475 | 1.364 | 1.069 | -2.984 | 4.423 |
| INST | 428 | -1.108 | 1.481 | -4.098 | 2.097 |
| PRIGHT | 475 | 3.992 | 1.932 | 1.000 | 7.000 |

Appendix 3a: Descriptive statistics on variables over the treatment group (TG2) of the 16 SSA countries suspended from the benefits of the AGOA programme

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|----------|--------------|----------|--------------------|---------|-----------|
| TOTREV | 216 | 14.060 | 5.106 | 6.479 | 35.645 |
| RESREV | 150 | 1.551 | 1.951 | 0.000 | 9.489 |
| NRESREV | 150 | 12.376 | 5.117 | 5.091 | 35.645 |
| TAXREV | 208 | 11.302 | 4.091 | 3.719 | 31.517 |
| NRTAX | 181 | 10.743 | 4.358 | 3.719 | 31.517 |
| RTAX | 180 | 0.458 | 0.869 | 0.000 | 5.687 |
| NRDOMTAX | 159 | 11.045 | 4.523 | 3.117 | 31.517 |
| TRTAX | 168 | 2.417 | 1.645 | 0.687 | 12.748 |
| NTAX | 181 | 2.887 | 2.386 | 0.190 | 11.009 |
| RNTAX | 136 | 1.055 | 1.850 | 0.000 | 9.489 |
| NRNTAX | 135 | 1.480 | 1.455 | 0.115 | 7.022 |
| MATR | 207 | 14.179 | 3.361 | 5.000 | 19.000 |
| GDPC | 216 | 1221.528 | 2408.688 | 255.100 | 19481.650 |
| INFL | 216 | 0.065 | 0.069 | -0.035 | 0.444 |
| VAMAN | 216 | 9.369 | 4.680 | 1.721 | 29.560 |
| POPGR | 216 | 2.757 | 0.653 | 0.782 | 5.078 |
| INST | 209 | 54.178 | 4.322 | 38.500 | 66.300 |
| PRIGHT | 216 | 5.056 | 1.314 | 2.000 | 7.000 |

Appendix 3b: Descriptive statistics on variables over the control group (CG2) of the 26 SSA countries (that were eligible for the AGOA program, but never suspended from the benefits of the program)

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|----------|--------------|--------|--------------------|---------|---------|
| TOTREV | 426 | 20.205 | 10.909 | 5.537 | 66.203 |
| RESREV | 305 | 5.785 | 8.668 | 0.000 | 40.756 |
| NRESREV | 305 | 13.414 | 6.635 | 3.248 | 35.026 |
| TAXREV | 385 | 16.585 | 9.161 | 3.948 | 60.946 |
| NRTAX | 369 | 13.916 | 7.998 | 3.133 | 60.946 |
| RTAX | 323 | 1.776 | 5.153 | 0.000 | 36.349 |
| NRDOMTAX | 312 | 15.171 | 8.210 | 3.137 | 60.946 |
| TRTAX | 385 | 3.601 | 5.276 | 0.000 | 40.861 |
| NTAX | 369 | 6.228 | 8.010 | 0.071 | 40.756 |
| RNTAX | 271 | 3.099 | 7.031 | 0.000 | 40.756 |

| | | | | | |
|-----------|-----|----------|----------|---------|-----------|
| NRNTAX | 291 | 1.545 | 1.555 | 0.000 | 8.286 |
| SHEXPAGOA | 426 | 2.429 | 5.470 | 0.000 | 32.176 |
| SHOEXP | 426 | 24.066 | 17.344 | 2.660 | 129.371 |
| MATR | 409 | 12.626 | 3.587 | 3.000 | 18.000 |
| GDPC | 426 | 2125.537 | 2100.946 | 360.344 | 10956.950 |
| INFL | 426 | 0.071 | 0.077 | -0.169 | 0.982 |
| VAMAN | 426 | 9.927 | 4.827 | 0.233 | 23.587 |
| POPGR | 426 | 2.526 | 0.850 | -0.402 | 5.627 |
| INST | 417 | 56.253 | 6.623 | 38.900 | 77.000 |
| PRIGHT | 426 | 3.862 | 1.702 | 1.000 | 7.000 |

Appendix 5a: List of the 42 SSA countries in the treatment group TG1, the 30 developing countries (non-SSA IDA countries) in the control group CG1, and the 15 resource-rich SSA countries among countries in TG1.

| Treatment group (TG1 - SSA Countries) | | Control group (CG1 - non-SSA IDA countries) | |
|---------------------------------------|-----------------------|---|--------------------------------|
| Angola** | Kenya | Afghanistan | St. Lucia |
| Benin | Lesotho | Bangladesh | St. Vincent and the Grenadines |
| Botswana** | Liberia** | Bhutan | Sudan |
| Burkina Faso | Madagascar | Cambodia | Tajikistan |
| Burundi | Mali | Dominica | Timor-Leste |
| Cabo Verde | Mauritania** | Fiji | Tonga |
| Cameroon | Mauritius | Grenada | Uzbekistan |
| Central African Republic | Mozambique | Haiti | Vanuatu |
| Chad** | Namibia** | Honduras | Zimbabwe |
| Congo, Dem. Rep** | Niger** | Kyrgyz Republic | |
| Congo, Rep** | Nigeria** | Lao PDR | |
| Cote d'Ivoire | Rwanda | Maldives | |
| Djibouti | Sao Tome and Principe | Marshall Islands | |
| Eritrea | Senegal | Micronesia, Fed. Sts. | |
| Eswatini | Seychelles | Myanmar | |
| Ethiopia | Sierra Leone** | Nepal | |
| Gabon** | South Africa** | Pakistan | |
| Gambia, The | Tanzania | Papua New Guinea | |
| Ghana | Togo | Samoa | |
| Guinea** | Uganda | Solomon Islands | |
| Guinea-Bissau | Zambia** | Sri Lanka | |

*Note: “**” refers to resource-rich SSA countries (see World Bank, 2024).*

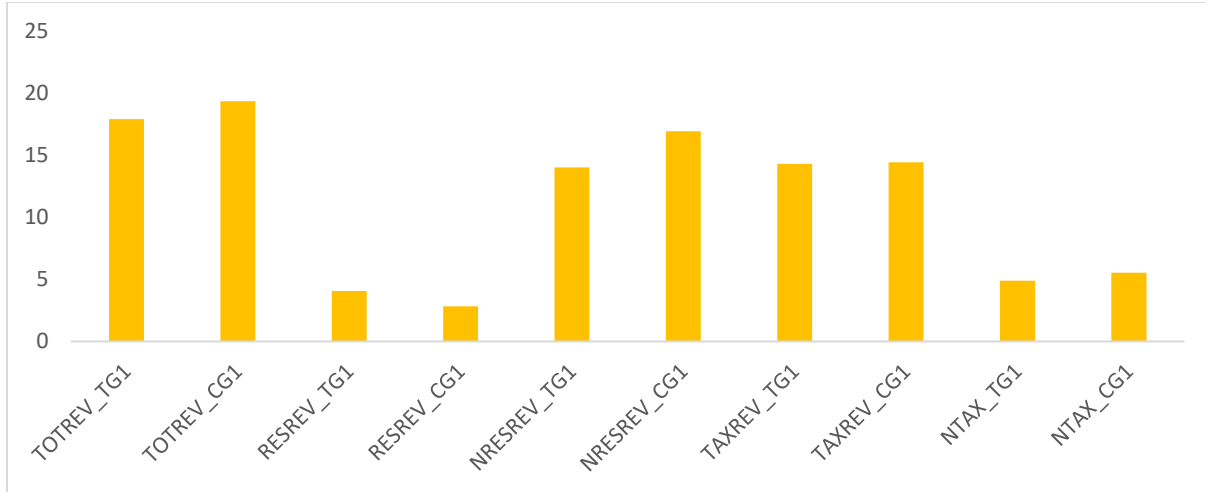
Appendix 5b: List of the 16 SSA countries suspended from the benefits of the AGOA programme (treatment group, TG2), and the 26 SSA countries never suspended from the AGOA programme eligibility (control group, CG2)

| Treatment group (TG2 - Suspended SSA Countries from the AGOA program) | Control group (CG2 - Non-Suspended SSA from the eligibility for the AGOA program) |
|--|--|
| Burundi | Angola |
| Cameroon | Benin |
| Central African Republic | Botswana |
| Congo, Dem. Rep | Burkina Faso |
| Cote d'Ivoire | Cabo Verde |
| Eritrea | Chad |
| Eswatini | Congo, Rep. |
| Ethiopia | Djibouti |
| Gambia, The | Gabon |
| Guinea | Ghana |
| Guinea-Bissau | Kenya |
| Madagascar | Lesotho |
| Mali | Liberia |
| Mauritania | Mauritius |
| Niger | Mozambique |
| Seychelles | Namibia |
| | Nigeria |
| | Rwanda |
| | Sao Tome and Principe |
| | Senegal |
| | Sierra Leone |
| | South Africa |
| | Tanzania |
| | Togo |
| | Uganda |
| | Zambia |

*Note: “**” refers to resource-rich (essentially metal-rich) countries among the suspended SSA countries from the AGOA programme.*

FIGURES

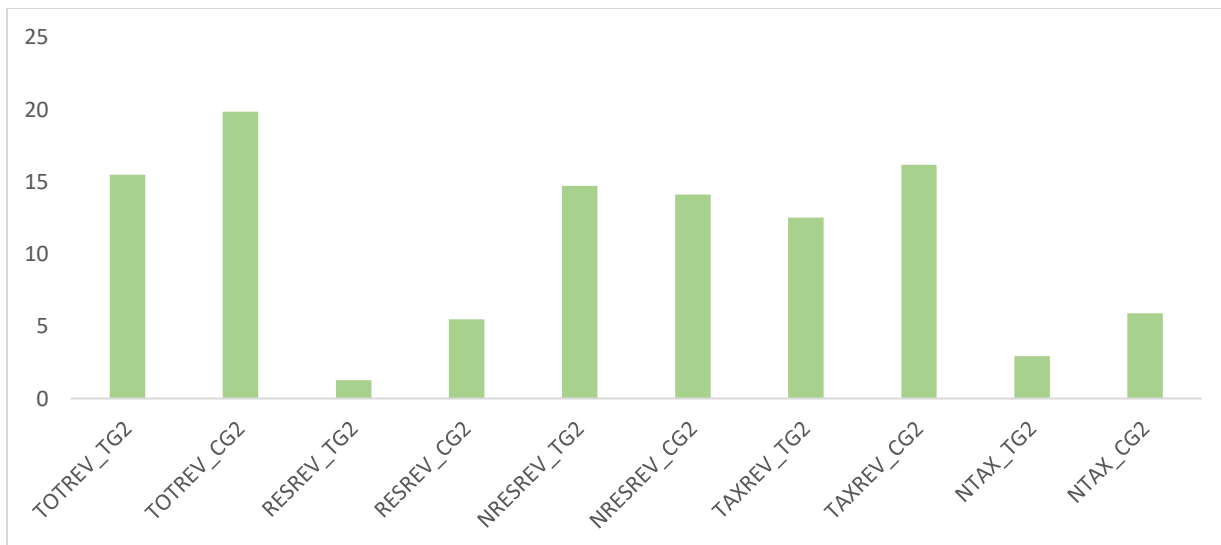
Figure 1: Average public revenue indicators in the Treatment group of AGOA beneficiary countries, and the control group (countries that do not benefit from the AGOA program)



Source: Author

Note: The acronyms "TG1" and "CG1" refer respectively to the Treatment group (SSA countries eligible for the AGOA program), and the Control group (non-SSA countries that are members of the IDA category). The average indicators were computed over the period 1996-2022.

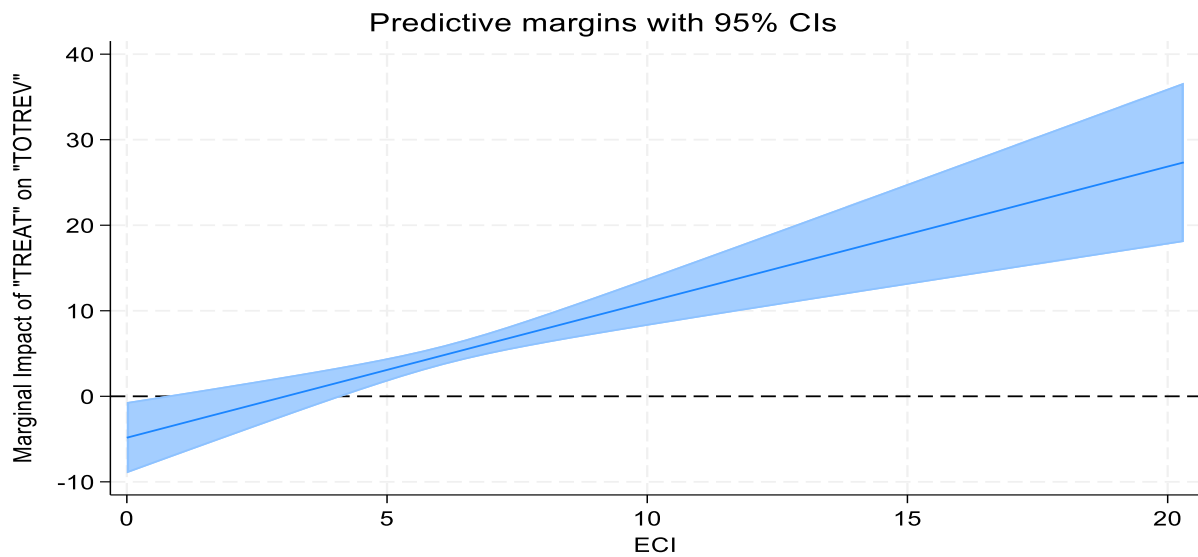
Figure 2: Average public revenue indicators in the Treatment group of countries suspended from the benefit of the AGOA program, and the control group of SSA countries never suspended from the benefit of the AGOA program



Source: Author

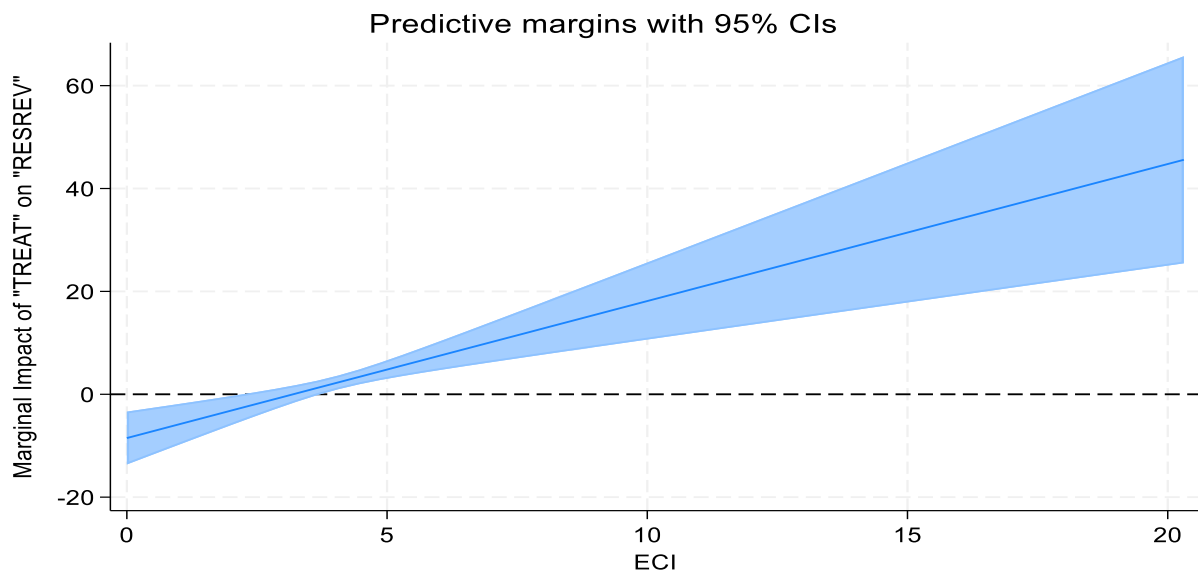
Note: The acronyms "TG2" and "CG2" refer respectively to the Treatment group (SSA countries eligible for the AGOA program), and the Control group (non-SSA countries that are members of the IDA category). The average indicators were computed over the period 2001-2022.

Figure 3: Marginal Impact of "TREAT" on "TOTREV" for varying levels of the overall export product diversification



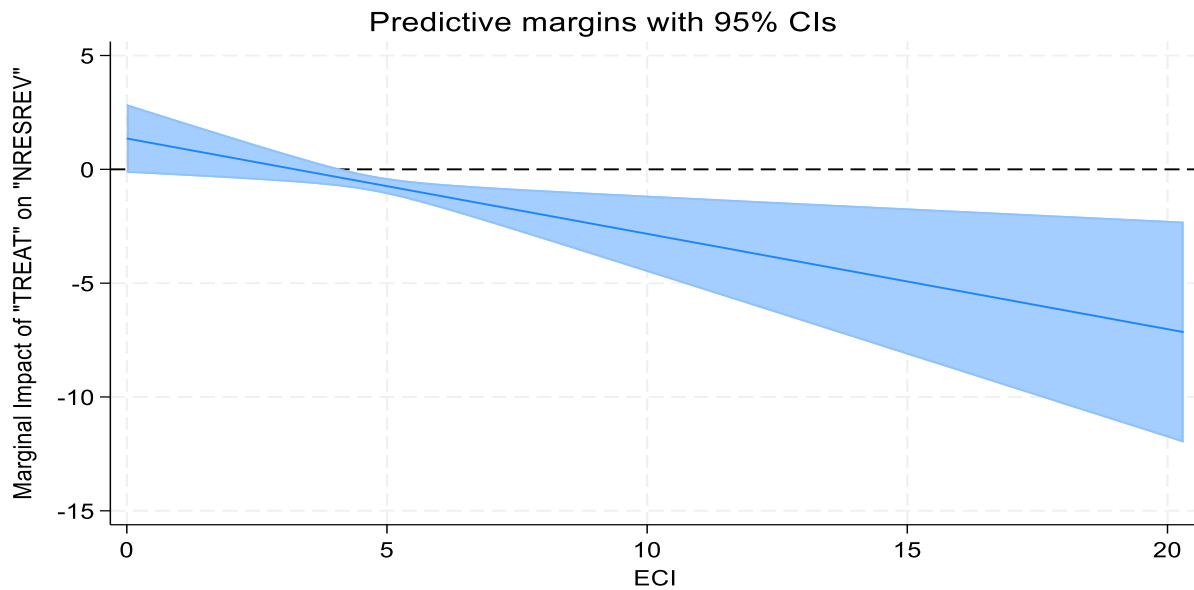
Source: Author

Figure 4: Marginal Impact of "TREAT" on "RESREV" for varying levels of the overall export product diversification



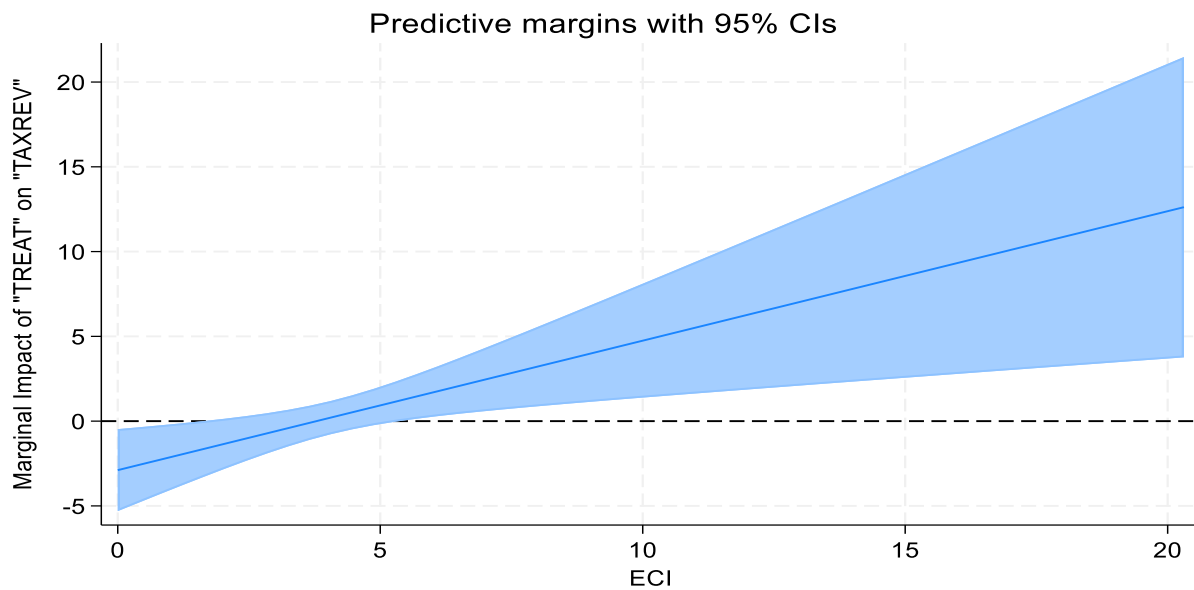
Source: Author

Figure 5: Marginal Impact of "TREAT" on "NRESREV" for varying levels of the overall export product diversification



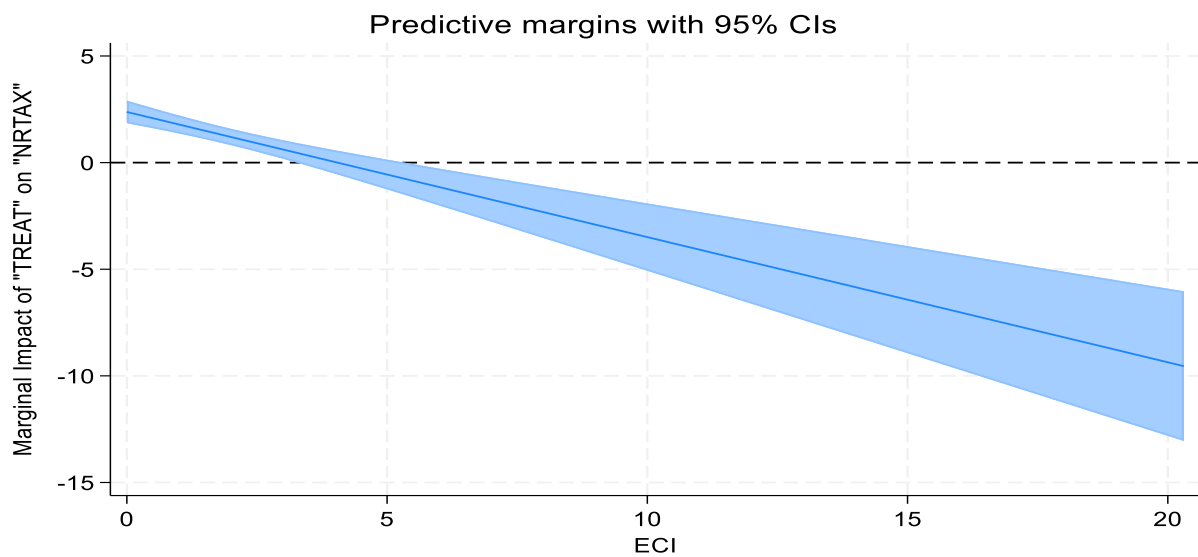
Source: Author

Figure 6: Marginal Impact of "TREAT" on "TAXREV" for varying levels of the overall export product diversification



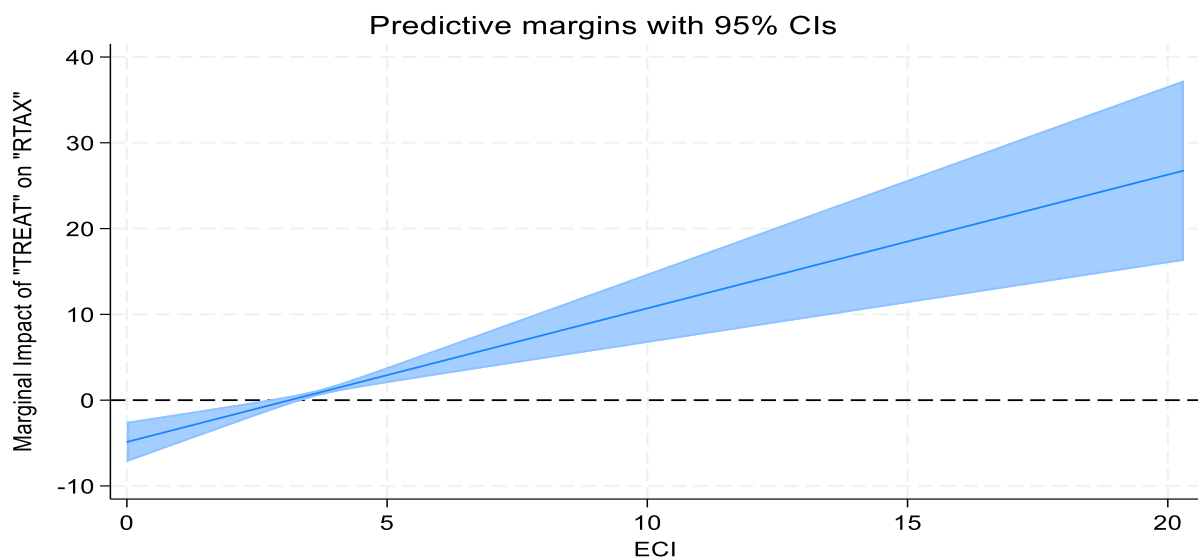
Source: Author

Figure 7: Marginal Impact of "TREAT" on "NRTAX" for varying levels of the overall export product diversification



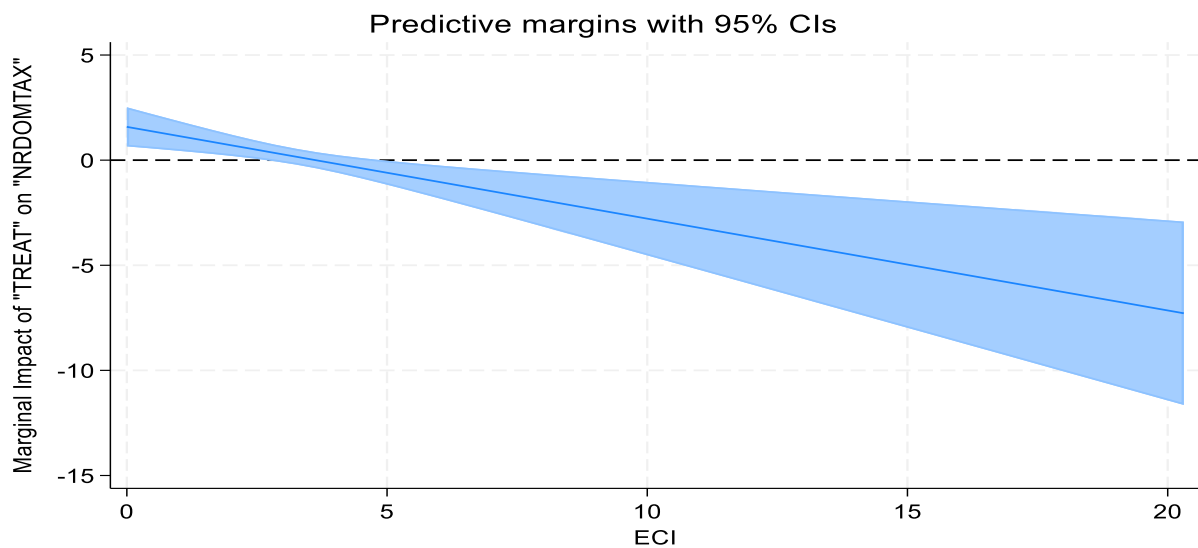
Source: Author

Figure 8: Marginal Impact of "TREAT" on "RTAX" for varying levels of the overall export product diversification



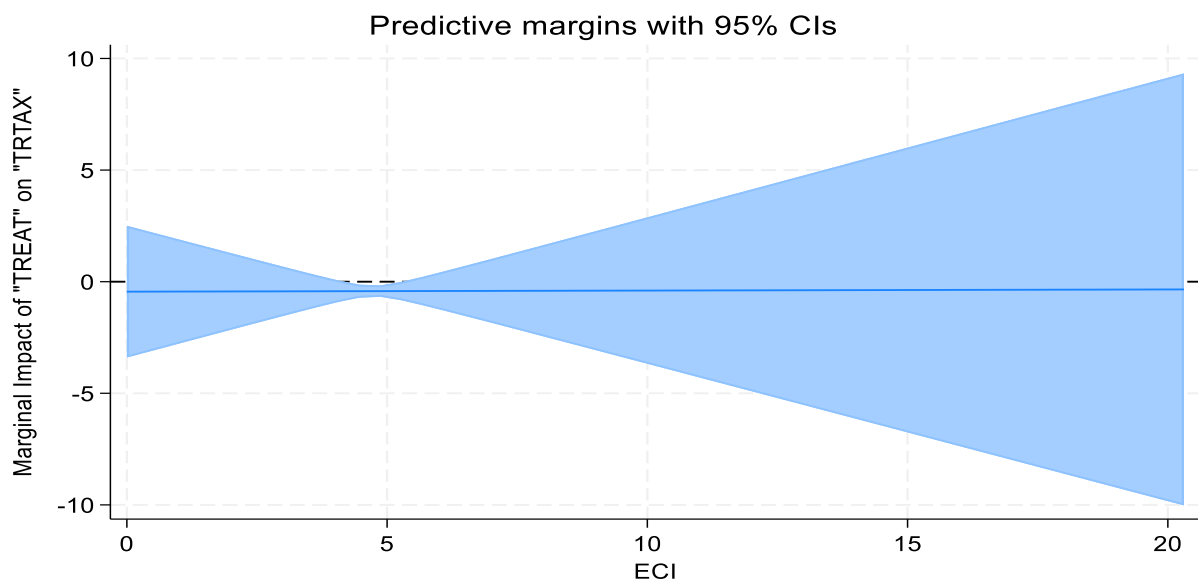
Source: Author

Figure 9: Marginal Impact of "TREAT" on "NRDOMTAX" for varying levels of the overall export product diversification



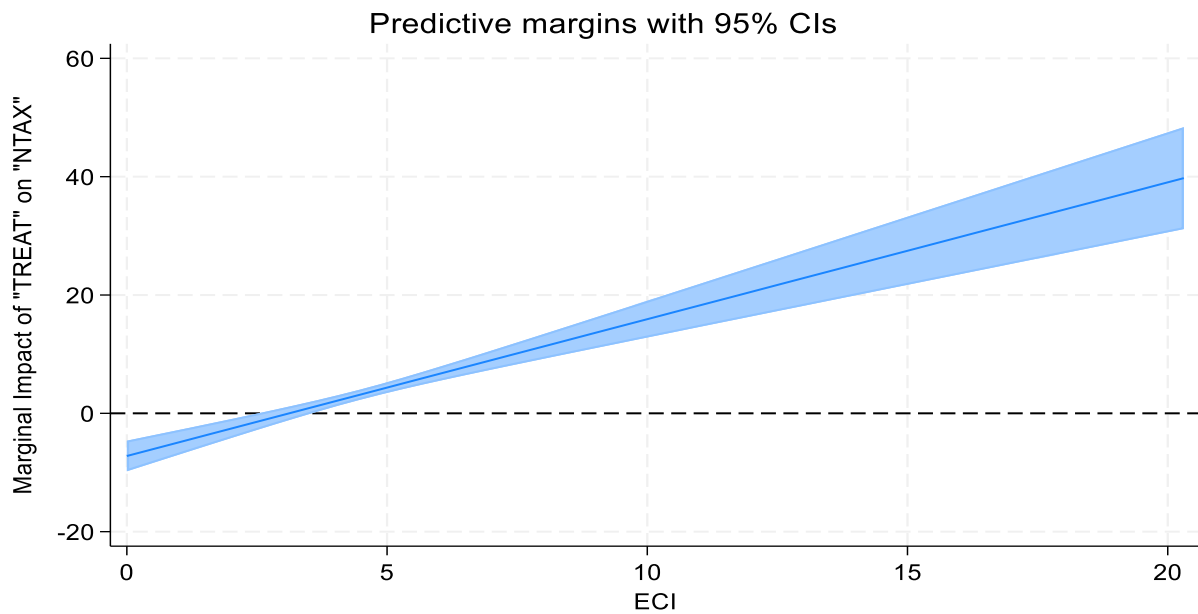
Source: Author

Figure 10: Marginal Impact of "TREAT" on "TRTAX" for varying levels of the overall export product diversification



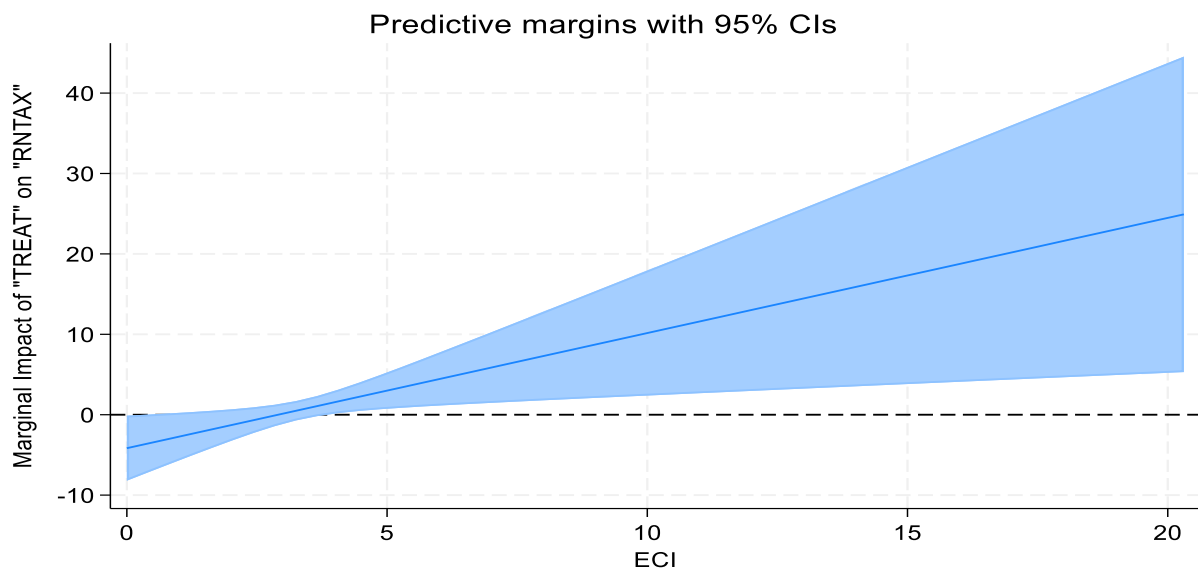
Source: Author

Figure 11: Marginal Impact of "TREAT" on "NTAX" for varying levels of the overall export product diversification



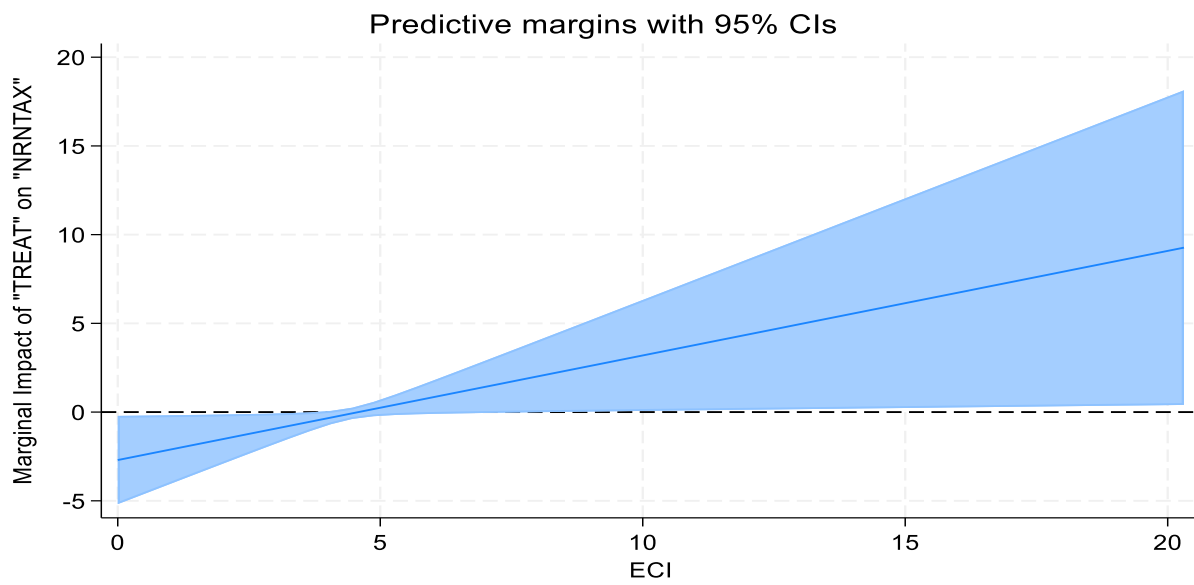
Source: Author

Figure 12: Marginal Impact of "TREAT" on "RNTAX" for varying levels of the overall export product diversification



Source: Author

Figure 13: Marginal Impact of "TREAT" on "NRNTAX" for varying levels of the overall export product diversification



Source: Author