# Trade Growth Under the U.S. African Growth and Opportunity Act:
# A Synthetic Control Method with Multiple Treated Units

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## Introduction

▪ The U.S. Growth and Opportunity Act (AGOA) is non-reciprocal trade agreement signed in 2000 between U.S. and selected sub-Saharan African (SSA) countries to promote economic development in the region.
▪ The program gives duty-free access of 6800 selected products from member countries to the U.S. market.
▪ The AGOA currently includes 39 SSA countries and was reauthorized for ten more years in 2015, extending it to 2025.
▪ In this paper, we examine whether the AGOA contributed to the growth in SSA by increasing exports of its member nations.
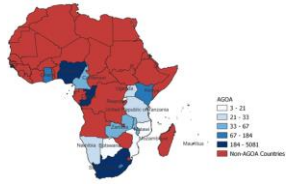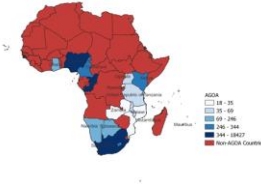


## Literature Review

▪ Studies looking at the impact of the AGOA have used various methods and come up with different conclusions.
▪ Tadesse and Fayissa (2008) use gravity model with data from 1991 – 2006 and show that AGOA has contributed to the initiation of new, but insubstantial, exports.
▪ Frazer and Van Biesebroeck (2010) use triple-difference approach with data from 1998 – 2006 and find positive effect.
▪ Moyo et al. (2018) use PSM and find negative effect with selection bias issues.
▪ Kassa and Coulibaly (2018) used synthetic control method (SCM) on individual countries with mixed effect.

▪ **Research Gap:** While many studies have looked at AGOA impact, they focus on individual countries. We focus on the policy itself by simultaneously studying the impact of the program on all beneficiary countries. We establish in value terms how much countries have benefited from AGOA.

## Objective

The purpose of the study is to investigate the causal impact of AGOA on beneficial countries exports to the US.

## Method

▪ We use the SCM with multiple treated units to analyze the cumulative impact of the AGOA (Abadie et al., 2015; Kreif et al., 2016).
▪ SCM enables the researcher to estimate the counterfactual, which in our setting represents the exports of AGOA members, had the AGOA program not been instituted.

### Data

▪ We use U.S-AGOA data from 1993 to 2015, which captures seven years pre-treatment and fifteen years post-treatment.
▪ We restrict our analysis to sixteen AGOA countries that joined the program at end of the year 2000 and have since remained in the program.
▪ The trade data come from the U.S. International Trade Commission. The dependent variable is the annual total product export (in millions of dollars) from each of the 16 AGOA countries to the U.S.

### Empirical Model

▪ The observed outcome variable can be written as:

$$Y_{it} = \begin{cases} Y_{it}^{NAGOA} & \text{in the absence of AGOA} \\ Y_{it}^{AGOA} = Y_{it}^{NAGOA} + \tau_{it}D_{it} & \text{in the presence of AGOA} \end{cases}$$

where $\tau_{it} = (Y_{it}^{AGOA} - Y_{it}^{NAGOA})$ is the effect of the trade agreement for country $i$ at time $t$ and $D_{it} = 1$ if $t > T_0$ and $i = 1$ and $D_{it} = 0$ otherwise.

▪The aggregate outcome for the treated country is defined as the weighted according to the relative frequency of the individual countries, so that

$$\bar{Y}_t^{AGOA} = \bar{Y}_t^{NAGOA} + \bar{\tau}_t D_t$$

where $\bar{Y}_t^{AGOA} = \frac{\sum_{i=1}^{T_1} Y_{it}^{AGOA}}{n}$, $\bar{Y}_t^{NAGOA} = \frac{\sum_{i=1}^{T_1} Y_{it}^{NAGOA}}{n}$, and $\bar{\tau}_t = \frac{\sum_{i=1}^{T_1} \tau_{it}}{n}$,

$D_t$ represents the treatment indicator in year $t$, and $n$ is the number of countries in the AGOA program.
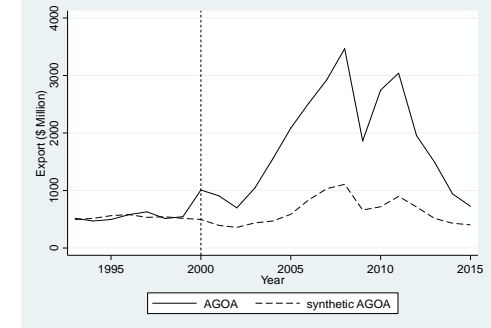
## Results



*Figure 1*: Exports Trends and Synthetic Controls

## Discussion

▪ Figure 1 shows that synthetic AGOA closely replicate the export trajectories of actual exports to the U.S. prior to the intervention.
▪ We estimate that AGOA member nations had US$1.18 billion (65.26%) higher exports than they would have had in absence of the AGOA, annually.

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