

**Preferential Market Access into the Chinese Market:
Is this a Solution to Africa's
Export Diversification and Growth Problem?**

By

**Catherine Yap Co
University of Nebraska at Omaha
and
Ralitza Dimova
The University of Manchester**

Introduction

- **China's current engagement with Africa is an important example of **south-south cooperation**.**
- **One of the priority areas of the United Nations' Development Cooperation Forum (DCF).**
- **DCF tracks the progress and coherence of countries' international development cooperation activities.**

Introduction

- “South-South cooperation has features that set it apart from North-South cooperation, such as **absence of conditionality....**”
ECOSOC (2010, p. 7)
- **Mutually beneficial exchange** is a core characteristic of south-south cooperation.

Introduction

- **Developing SSA GDP growth, 2011: 4.7%.**
- **Worldwide rate: 2.7% (World Bank, 2013).**
- **Mo Ibrahim index on safety and rule of law shows that a third of the countries in SSA experienced **improvements in governance** while two-thirds of countries experienced **increased sustainable economic opportunities** in 2006-2010 (Mo Ibrahim Foundation, 2011).**

Introduction

- Africa's challenges related to international trade remain two-fold:
 - **overcoming supply-side constraints** (see e.g., Collier and Venables, 2007);
 - **overcoming market access constraints** (see e.g., Chuhan-Pole and Angwafo, 2011; Mshomba, 2009).

Introduction

- China's preferential market access program (duty-free) addresses market access constraints.
- US' **African Growth Opportunity Act** (AGOA, 2000) which provides duty-free access to US imports of more than 6,400 items from eligible SSA countries until Sept. 30, 2015.
- Europe's '**Everything But Arms**' program.

Introduction

- **China-Africa engagement is not a recent phenomenon.**
- **Brautigam (2009). The Dragon's Gift.**
- **Forum on China-Africa Cooperation (FOCAC): main venue for collective dialogue between China and 49 African member states since 2000.**

Introduction

- **Preferential market access (duty-free access) was first promised at the 2nd FOCAC Ministerial Conference in 2003.**



Notes: Post-WTO entry (12-11-01).

Program expanded to more than 4,700 items since July 2010.

Introduction

- Main research question:
- Whether Chinese imports of preference-eligible **products** from preference-eligible **countries** during the preferential **period** is higher.

Data

- Trade data at the six-digit Harmonized System (HS) codes level from UN Comtrade.

China's Top Five Imports from SSA				
Year	HS	Share	Desc.	Group
2010	270900	0.47	Petroleum oils & oils obt. from bituminous mins., crude	Other primary
2010	740311**	0.13	Cathodes & sections of cathodes, of ref. copper, unwrought	Other manufacturing
2010	740200**	0.13	Unrefined copper; copper anodes for electrolytic refining	Other manufacturing
2010	260500	0.05	Cobalt ores & concs.	Other primary
2010	260111	0.04	Iron ores & concs. (excl. roasted iron pyrites), non-agglom.	Other primary
	Top 5,	0.82		

Notes: ** included in the preferential list. Petroleum share in 2002 was 0.83; Cathodes share was 0.01.

Table 1. Number of Six-Digit Harmonized System Items Receiving Preferential Market Access

Product Group	Number		MFN Duty Rates, % (Mean)	
	Phase I	Phase II	Phase I	Phase II
Food and Live Animals	24	44	11.38	12.93
Other Primary Products	32	62	6.16	6.27
Textile and Apparel	36	124	12.44	11.98
Chemicals, Machinery, and Transport Equip.	29	78	8.11	8.04
Other manufactures	<u>59</u>	<u>148</u>	<u>10.14</u>	<u>11.48</u>
All items	180	456	9.73	10.46

Notes: ^{a/} Other primary products includes beverages and tobacco; crude materials, inedible, except fuels; mineral fuels, lubricants and related materials; and animal and vegetable oils, fats and waxes. Other manufactures include manufactured goods classified chiefly by material (except textiles) and miscellaneous manufactured articles (except apparel and clothing). ^{b/}Number of six-digit 2002 Harmonized System codes.

Methodology

- 1) Measuring the trade growth implications of the program:
 - a) **Sample: Only preference-eligible SSA countries.** Did imports of preference-eligible products from these countries increase?

Estimate the following fixed effects regression model:

$$\ln IMP_{pt} = \alpha_c + \beta_1(i.product_p) + \beta_2(i.prd_t) + \beta_3(i.product_p * i.prd_t) + \varepsilon_{pt}, \quad (1)$$

where $\ln IMP_{pt}$ is the natural log of China's import of product p at period t from a preference-eligible SSA country.

Methodology

- 1) Measuring the trade growth implications of the program:
 - b) **Sample: Only preference-eligible products.** Did imports of these products from preference-eligible countries increase?

The following fixed effects regression model is estimated:

$$\ln IMP_{ct} = \alpha_p + \beta_1(i.country_c) + \beta_2(i.prd_t) + \beta_3(i.country_c * i.prd_t) + \varepsilon_{ct}, \quad (2)$$

where $\ln IMP_{ct}$ is the natural log of China's imports from country c at period t of preference-eligible products.

Methodology

- 1) Measuring the trade growth implications of the program:
 - c) Sample: All countries (193), all products (5,215)

Estimate the following econometric model:

$$\ln IMP_{cpt} = \beta_1 (i.country1_c * i.product1_p * i.prd1_t) + \beta_2 (i.country2_c * i.product2_p * i.prd2_t) + country/product_{cp} + product/year_{pt} + country/year_{ct} + \varepsilon_{cpt}, \quad (3)$$

where the coefficients of the triple interaction terms (*i.country***i.product***i.prd*) give the unbiased trade effects of the two phases of China's preferential market access program for the least developed preference-eligible SSA countries, after accounting for the possibility of non-random selection of both countries and products in the preferential list.

Methodology

- **1c) We follow Frazer and Van Biesebroeck's (2010) triple-differencing approach.**

After a sequential de-meaning process and, equation (4) below is the model estimated:

$$\begin{aligned} \ln IMP_{cpt}^* &= \beta_0^* + \beta_1^* (i.country1_c * i.product1_p * i.prd1_t)^* \\ &+ \beta_2^* (i.country2_c * i.product2_p * i.prd2_t)^* + \varepsilon_{cpt}^* , \end{aligned} \quad (4)$$

where asterisks indicate de-meaned variables and their corresponding coefficients.

Methodology

- **Positive coefficient** is expected for the triple interaction terms.
- Upon implementation of the preferential market access program, imports of preference-eligible products from preference-eligible countries are expected to increase.

Methodology

- 1c) Another way to think of triple interaction term.

$$DDD = (\bar{y}_{CP2} - \bar{y}_{CP1}) - (\bar{y}_{C'P2} - \bar{y}_{C'P1}) - (\bar{y}_{CP'2} - \bar{y}_{CP'1})$$

Time change
in imports of
preference-
eligible
products
from
preference-
eligible
countries
(period)

Time change
in imports of
preference-
eligible
products
from
preference-
non-eligible
countries
(product)

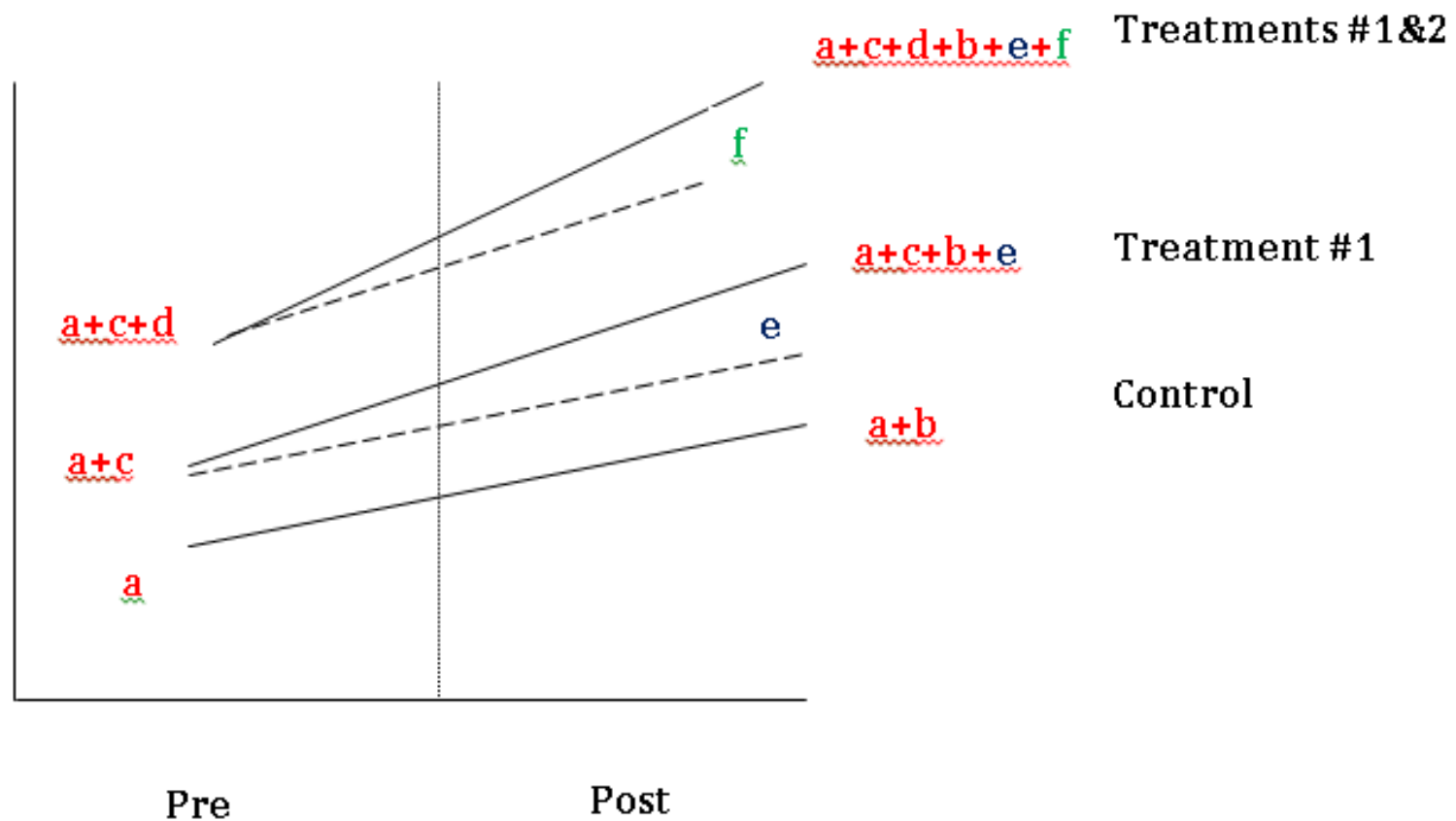
Time change
in imports of
preference-
non-eligible
products
from
preference-
eligible
countries
(country)

b: trend

c, d: "natural" difference across groups

e: double interaction effect

f: triple interaction effect



Results

Table 3. Fixed Effects Regression Estimates

	Sample: Preference-eligible SSA Countries		Sample: Preference-eligible Products	
	Phase I (1)	Phase II (2)	Phase I (3)	Phase II (4)
<i>i.product</i>	0.2950*** (0.087)	0.1459*** (0.039)	-	-
<i>i.prd</i>	0.0138*** (0.003)	0.0180*** (0.004)	0.3112*** (0.028)	0.2456*** (0.024)
<i>i.country</i>	-	-	-1.5000*** (0.091)	-1.5944*** (0.055)
<i>i.product*i.prd</i>	0.0805*** (0.023)	0.0737*** (0.013)	-	-
<i>i.country*i.prd</i>	-	-	-0.2169*** (0.037)	-0.1539*** (0.024)
Constant	0.0095* (0.005)	0.0129** (0.005)	1.8046*** (0.011)	1.7532*** (0.008)
Country-specific fixed effects	yes	yes	-	-
Product-specific fixed effects	-	-	yes	yes

Table 4. Regression Coefficient Estimates: Triple Interaction Terms

	Full Sample	Middle and Low Income Countries	Low Income Countries
	(1)	(2)	(3)
<i>i.country1*i.product1*i.prd1</i>	-0.0989*** (0.025)	-0.1142*** (0.023)	-0.0707*** (0.024)
<i>i.country2*i.product2*i.prd2</i>	-0.0884*** (0.027)	-0.1308*** (0.023)	-0.1124*** (0.022)
<i>Phase I (2005-2007): triple interaction terms</i>			
Food and Live Animals	-0.0096 (0.075)	-0.0319 (0.073)	-0.1124 (0.091)
Other Primary Products	0.1577** (0.078)	0.1401* (0.073)	0.0985 (0.070)
Textile and Apparel	-0.2347*** (0.038)	-0.2497*** (0.040)	-0.1557*** (0.041)
Chemicals, Machinery, and Transport Equip.	-0.2354*** (0.051)	-0.2286*** (0.052)	-0.1482*** (0.044)
Other Manufactures	-0.0755* (0.041)	-0.0947*** (0.034)	-0.0247 (0.038)

Qualitatively similar results for Phase II.

Results

- Negative coefficients suggest that China's preferential market access program **has not had the intended effect of increasing trade** from low income SSA countries in the selected products.
- In fact, imports of preference-eligible products from preference-eligible SSA countries are lower upon program implementation.
- Why?

Results

- Because crude petroleum continue to dominate these countries' exports to China.
- However, there are some signs that with time, **some SSA countries might be able to overcome** their over-reliance on raw material exports and constraints in their ability to transition to products with slightly more value added.

Methodology

- **2) Export diversification and moving up the value chain.**
- **China's preferential trade program improves the **export diversification** potential of the African partners?**
- **Or, does it further entraps these countries into primary resource-based production and exports?**

Methodology

- 2a) Exporter product concentration

To measure the concentration of each preference-eligible country c 's exports to China at period t ,

we use:

$$HHI_{ct} = \sum_{p=1}^m \left(\frac{IMP_{cpt}}{IMP_{ct}} \right)^2 \quad (8)$$

where IMP_{ct} is China's total imports from country c at period t and IMP_{cpt} is China's import of product p from country c at period t . HHI_{ct} falls between 0 and 1, with 1 indicating that all imports from country c at period t is in one product.

Methodology

- 2b) Export sophistication

For any given period t , the export sophistication index, EXP_c is defined as follows:

$$EXP_c = \sum_{p \in P} s_{pc} PROD_p \quad (9)$$

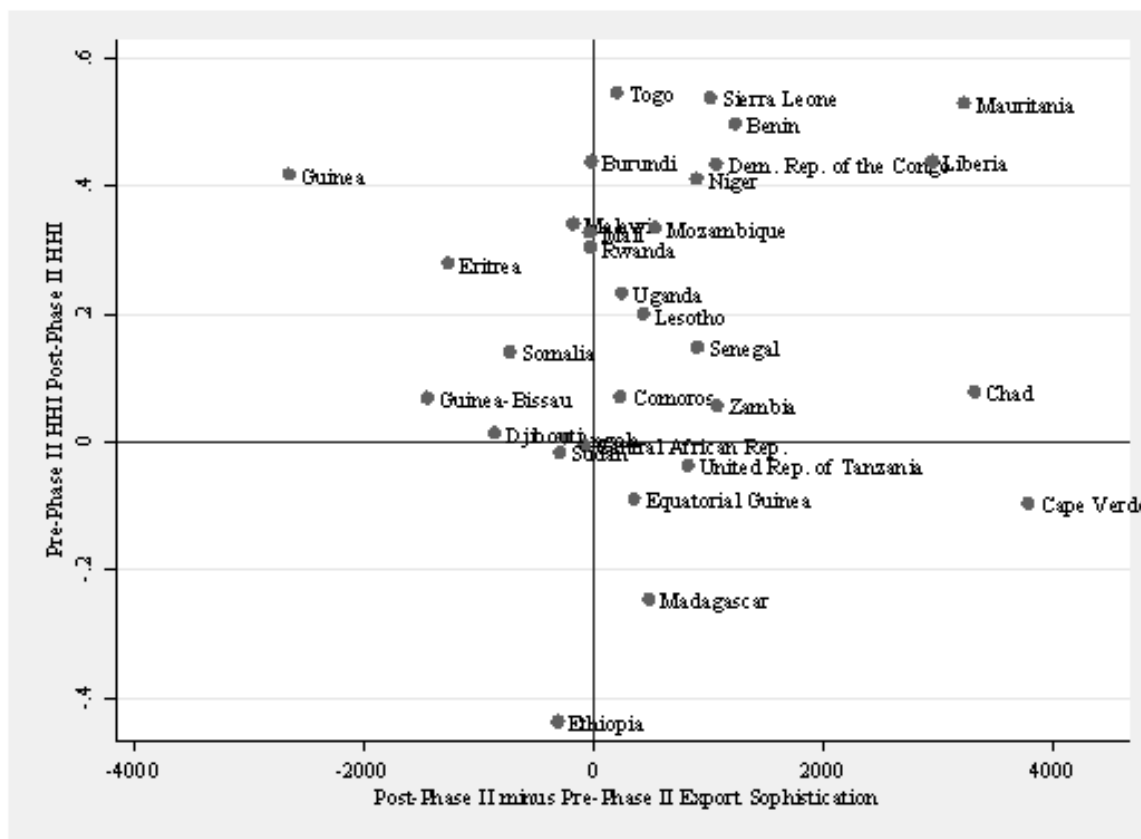
where s_{pc} is the share of product p in country c 's exports, P is the set of all products exported by country c , and $PROD_p$ measures the sophistication of product p . A product's sophistication is weighted by the income of all countries exporting the good and is calculated as:

$$PROD_p = \sum_{i \in C_p} \frac{s_{pi}}{\sum_{k \in C_p} s_{pk}} PCY_i \quad (10)$$

where C_p is the set of all countries that export product p and PCY_i is the real per capita income of country i .

Results

Figure 2. Change in Exporter Product Concentration Index (HHI_{it}) and Export Sophistication (EXP_{it}), Phase II



Note: Positive values for the vertical axis indicate a less concentrated export structure while positive values for the x-axis indicate increased export sophistication post-program implementation.

Results

- **Single out: Democratic Republic of the Congo (DRC) and Zambia.**
- **Rather than raw ores and minerals, the DRC and Zambia are now exporting **processed ores and minerals** to China.**
- **They have also experienced gains in market share.**

Results

Table 7. Country Share in China's Imports from Preference-eligible SSA Countries Pre- (2002-2004) and Post- (2008-2010) Phase II of the Preferential Market Access Program Annual Average Rates, in percent

Partner	Pre-Phase II			Post-Phase II		
	All Products	Preference-eligible Products	Non-preferential Products	All Products	Preference-eligible Products	Non-preferential Products
Angola	48.0079	0.2674	49.1483	61.1144	1.7105	66.4393
Dem. Rep. of the Congo	0.7372	1.4932 ↙	0.7164	5.2355	36.1088 ↙	2.7338
Sudan	31.1758	6.3454	31.7670	18.1928	1.4781	19.6960
Zambia	1.5764	60.9571 ↙	0.1390	4.4689	45.1148 ↙	0.5150

Note: Authors' calculations using data from the UN Comtrade database.

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Implications

Table 8. Selected Characteristics of the Preference-eligible SSA countries and South Africa, 2008-2010

Variables	Mean	Std Dev.	Export Structure Concentration	Export Sophistication	Market Share	South Africa
			Correlation			
Export Structure Concentration	0.573	0.224	1.0000			--
Export Sophistication	2,082.060	1,765.853	0.3230	1.0000		--
Market Share	3.306	11.660	0.4076	0.5183	1.0000	--
Mobile subscriptions (per 100 inhabitants)	30.349	16.679	-0.1037	0.5263	0.1660	95.018
Time required to get electricity (days)	161.362	133.889	-0.0600	-0.0355	-0.1907	214.000
CPIA transparency, accountability, and corruption in the public sector rating (1=low to 6=high)	2.713	0.607	-0.0776	0.0461	-0.1801	NA
CPIA property rights and rule-based governance rating (1=low to 6=high)	2.810	0.585	-0.3295	-0.1486	-0.3479	NA

Implications

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			Correlation			
Export Structure Concentration	0.573	0.224	1.0000			--
Export Sophistication	2,082.060	1,765.853	0.3230	1.0000		--
Market Share	3.306	11.660	0.4076	0.5183	1.0000	--
Time required to start a business (days)	40.138	44.586	0.2758	-0.0260	0.1259	22.000
Time required to enforce a contract (days)	689.046	318.368	0.2740	0.1217	0.1865	600.000
No. of documents to export	7.483	1.758	0.2294	0.0656	0.3858	8.000
Time to export (days)	36.103	14.939	0.2656	0.1611	0.3310	25.000
Cost of exporting one container (US\$)	2,020.517	1,219.265	0.1634	0.0859	-0.0077	1,502.333

Note: NA means not available. Source: World Development Indicators Database.

To conclude:

Preferential Market Access into the Chinese Market: A Solution to Africa's Export Diversification and Growth Problem?