

AfCFTA: Does it fast-track structural transformation in Senegal?

Leysa Maty SALL¹ **Maria Priscila Ramos**^{2, 3}

¹ AKADEMIYA2063

²Universidad de Buenos Aires, Facultad de Ciencias Economicas, Departamento de Economia, Buenos Aires (Argentina)

³CONICET-Universidad de Buenos Aires, Instituto Interdisciplinario de Economía Política de Buenos Aires (IIEP-Baires), Buenos Aires (Argentina)

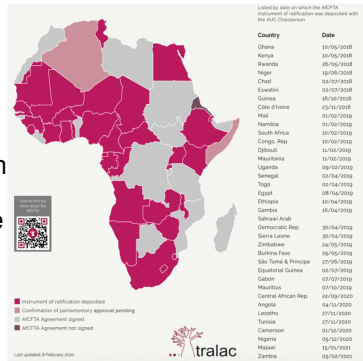
June 24, 2021

Presentation Outline

- 1 Introduction
- 2 Methodology
- 3 Key Findings
- 4 Conclusion and Policy implications

- 1 Introduction
- 2 Methodology
- 3 Key Findings
- 4 Conclusion and Policy implications

- Implementation of the AfCFTA: 54 of the 55 African Union states have signed the agreements
- PSE– to achieve the structural transformation of the economy and growth
- Structural transformation is defined as the transition of an economy from low productivity and labour intensive economic activities to higher productivity and skill intensive activities.



- Link between trade and the level of industrialization of the economy (Teignier, 2018)
- Export structure is a good predictor of economic growth (Hausmann et al., 2007; Hausmann & Hidalgo, 2011; Hidalgo et al., 2007).
- AfCFTA has the potential to boost intra-African trade by 52.3 per cent by eliminating import duties and reducing non-tariff barriers (UNECA, 2019)
- Gains from eliminating intra-Africa tariffs are positive but small, specially compared to that could provide lower NTMs and lower transactions costs.(Abrego et al., 2019, 2020), (Maliszewska & Ruta, 2020) and (Depetris Chauvin et al., 2017)

Objective: Assess the impact of on the Senegal's economy and to evaluate a potential economic transformation.

Specifics objectives are to evaluate :

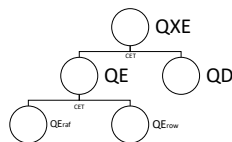
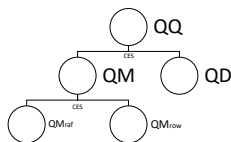
- 1 the impact on production and the various economic aggregates
- 2 the impact on trade potential (intra-African trade)
- 3 the effect on employment for each qualification.

Outline

- 1 Introduction
- 2 Methodology**
- 3 Key Findings
- 4 Conclusion and Policy implications

Single-country multi-sector multi-agent static CGE model based on the STAGE CGE model (STAGE 1) (McDonald, 2009)

STAGE CGE model with bilateral trade modelling



Import demand tree - CES structure

Export supply tree - CET structure

Three main data sources for calibration:

- **Social Accounting Matrix (SAM)** Boulanger et al. (2017): for Senegal for the year 2014 and free available SAM ;
- **BACI Database** Gaulier & Zignago (2010): Bilateral trade (imports and exports) between Senegal and its African and non-African partners at a compatible sector level with the SAM: ;
- **MAcMap-HS6 database** Guimbard et al. (2012) for 2013/2017 duties. Trade protection in Senegal over imports coming from African and non-African partners

Tariff Lines are ranked from the most sensitive to the least sensitive

- **Full Trade Liberalisation:**
- **Partial Trade Liberalisation with 10% of HS lines as sensitive:**
 - ① Elimination of all tariffs between Senegal and the rest of Africa except for sensitive products
 - ② Elimination of all tariffs + a tariff cut of a 50% for these sensitive products.
- **Partial Trade Liberalisation with sensitive of 30% of tariff revenue**

$$SCI = \frac{1}{2} \sum_i |x_{i,t} - x_{i,t-1}| \quad (1)$$

- The SCI is bounded between zero and 100, with zero representing no structural change while 100 indicates a complete reversal of structure (OECD 1994).
- Initial situation of 2014 and the results under each AfCFTA scenario.

Outline

- 1 Introduction
- 2 Methodology
- 3 Key Findings**
- 4 Conclusion and Policy implications

Tariff cuts (ratios)–

- The most sensitive products for Senegal are Mining, petroleum, cash crops, transport material, chemicals and food crops.
- The most sensitive products from rest of Africa are Mining products, Petroleum and Tobacco (processed).

- Production increases mainly for manufacturing sectors including manufactured food , Chemicals , Cash crops , Tobacco (processed) , Fertilizers and Machines.
- In contrast, production decreases for Mining products, Glass, pottery, Leather & footwear , Food crops and Forestry

Senegal's production - African Continental Free Trade Agreement

	Full Liberalisation	Sensitive Products 10% HS6 lines		Sensitive Products - 30% in tariff revenue
		No tariff change	50% tariff cut	
Food crops	-0.83	-0.04	-0.39	-0.67
Cash crops	1.15	0.12	0.54	0.90
Forestry	-2.74	-0.04	-0.23	-2.75
Mining products	-0.22	0.02	-0.26	0.28
Other manufactured food	2.71	0.18	1.25	1.75
Tobacco (processed)	0.81	0.07	0.41	0.41
Leather & footwear	-0.37	-0.15	-0.24	-0.37
Chemicals	1.20	0.18	0.53	1.09
Fertilizers	0.55	0.06	0.24	0.44
Glass, pottery	-0.37	-0.08	-0.23	-0.31
Machines	0.48	0.03	0.20	0.41

Key Findings-Impact on bilateral Senegal's imports by product (% change compared to the baseline).

Senegal's Imports - African Continental Free Trade Agreement								
	Full Liberalisation		Sensitive Products - 10% HS6 lines				Sensitive Products - 30% in tariff revenue	
	Africa	RoW	No tariff change		50% tariff cut		No tariff change	
			Africa	RoW	Africa	RoW	Africa	RoW
Food crops	38.94	-1.27	2.18	-0.07	18.69	-0.63	28.69	-1.02
Forestry	30612.02	-45.70	124.38	-1.21	993.27	-6.34	30593.13	-45.73
Grain milling	109.06	-1.48	6.20	-0.09	46.23	-0.68	108.88	-1.57
Cereal based food	27.08	-0.70	2.35	-0.06	13.84	-0.36	27.08	-0.70
Tobacco (processed)	139.76	-1.82	1.63	-0.08	51.42	-0.81	140.69	-1.44
Leather & footwear	68.52	-0.83	26.97	-0.36	45.86	-0.53	68.41	-0.89
Rubber	5.29	-0.22	1.23	-0.08	3.22	-0.16	5.24	-0.28
Glass, pottery	39.76	-1.28	11.49	-0.31	24.62	-0.73	39.83	-1.23

Key Findings-Impact on Senegal's bilateral exports by product (% change compared to the baseline)

Senegal's Exports - African Continental Free Trade Agreement				
	Full Liberalisation	Sensitive Products 10% HS6 lines		Sensitive Products - 30% in tariff revenue
		No tariff change	50% tariff cut	No tariff change
Food crops	-0.30	0.01	-0.15	-0.25
Livestock	-0.21	0.01	-0.11	-0.17
Fish	0.01	0.17	0.02	-0.01
Cash crops	-1.90	-0.04	-0.92	-1.27
Forestry	2.81	0.02	0.28	2.76
Minning products	0.23	0.00	0.27	-0.30
Meat - Fish processed	-0.10	0.22	-0.01	-0.10
Other manufactured food	-3.25	0.04	-1.50	-2.12
Grain milling	-0.52	0.04	-0.26	-0.26
Cereal based food	-0.53	0.07	-0.25	-0.48
Sugar	-0.46	0.03	-0.22	-0.04
Beverages	-0.26	0.11	-0.12	-0.16
Tobacco (processed)	-1.21	-0.01	-0.60	-0.62
Textile & clothing	0.05	-0.15	0.00	0.06
Leather & footwear	0.42	-0.01	0.29	0.37
Wood & paper	-0.52	0.02	0.05	-0.59
Printing and publishing	-0.21	0.02	-0.08	-0.15
Petroleum	-0.03	0.20	-0.02	-0.08
Chemicals	-1.32	0.05	-0.58	-1.19
Fertilizers	-0.44	-0.05	-0.19	-0.33
Rubber	0.26	0.05	0.17	0.19
Glass, pottery	-0.16	0.05	-0.04	-0.28
Metas	-0.59	0.01	-0.26	-0.53
Machines	-0.35	0.00	0.16	-0.56
Equipment	-0.24	0.07	-0.03	-0.23

Key Findings-Household Income and Welfare

Figure 1: Change in Households and enterprises Income

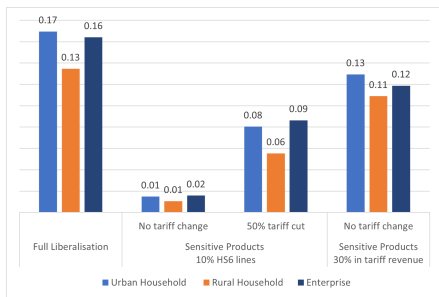


Figure 2: Equivalent variation by household on consumption

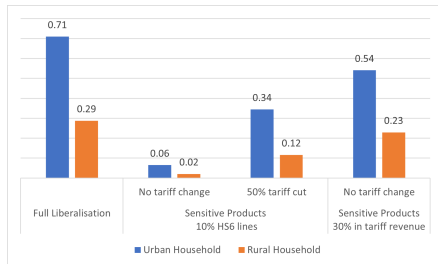
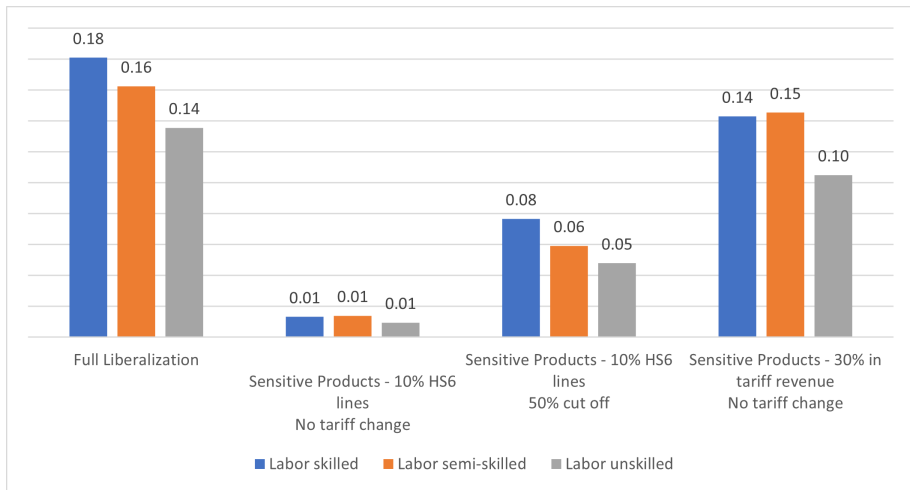
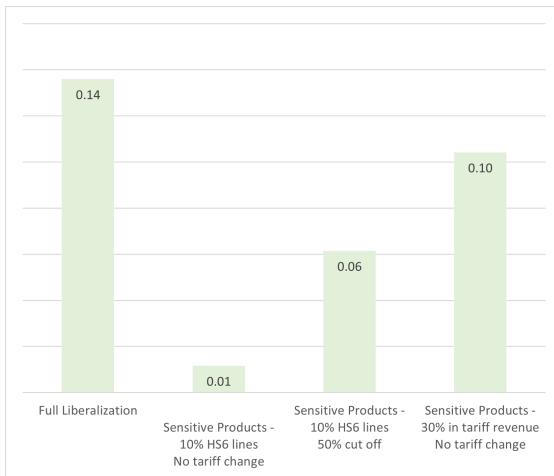


Figure 3: Change in Labor Income



Key Findings-Structural Change Index (SCI)

Figure 4: Change in SCI- over 1 period



Outline

- 1 Introduction
- 2 Methodology
- 3 Key Findings
- 4 Conclusion and Policy implications**

Policy implications

- The most sensitive products for Senegal are Mining, petroleum, cash crops, transport material, chemicals and food crops.
- The most sensitive products from rest of Africa are Mining products, Petroleum and Tobacco (processed).
- Full liberalization has a positive impact on household consumption globally and affects the production structure with a higher impact on manufacturing sector.
- the choice of sensitive products is critical and have several implications.
- Liberalization can increase household income especially for urban households
- AFCFTA has the potential to foster structural transformation
- Our results suggest that the criteria based on tariff revenue may be closer to the optimum full liberalization scenario.

Next Steps

- Use empirical results to calibrate elasticities and provide a Sensitivity Analysis
- Given the long term process of structural transformation and the fact that Trade in goods is based on the progressive elimination of import duties a dynamic model would suit better
- Estimate the AVE of Non Tariff measures to take into account Non tariff barriers in the model.
- Use macro results from the CGE modeling to simulate the potential impact on poverty, employment

This research project was undertaken thanks to the joint initiative between the United Nations Economic Commission for Africa (ECA) and the International Food Policy Research Institute (IFPRI) on economic modeling with a focus on the AfCFTA, under the mentoring of Dr. Maria Priscila Ramos (UBA-CONICET, IIEP & CEPIL) and with financial support from the European Union.

Thank you !

More details lsall@akademiya2063.org // leysa.maty.sall@gmail.com



**Global Trade
Analysis Project**

Annexes

Single-country multi-sector multi-agent static CGE model based on the STAGE CGE model (STAGE 1)

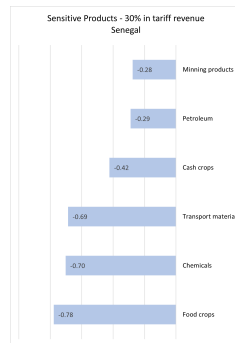
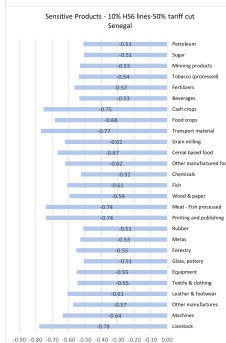
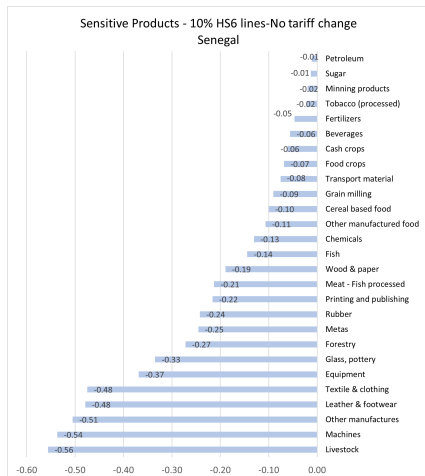
Main characteristics of the STAGE model are:

- a generalised treatment of trade relationships by incorporating provisions for non-traded exports and imports;
- relaxation of the small country assumption for exported commodities that do not face perfectly elastic demand on the world market;
- multiple product activities (fixed proportions of commodity outputs);
- production technologies specified as nested Constant Elasticity of Substitution (CES);
- household consumption expenditure represented by Stone-Geary utility functions.

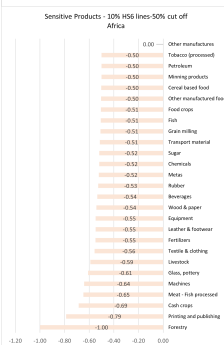
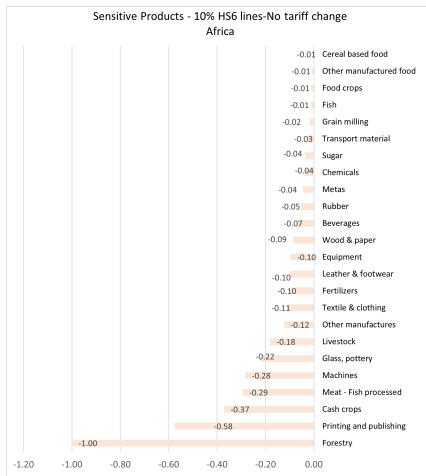
Table 1: Senegal SAM 2014 - Accounts details - Boulanger et al. (2017)

Categories	Description
Activities	55 activities including 14 representative household groups producers
Commodities	66 commodities with 57 marketed commodities and 9 self-consumed commodities
Regions	14 regions including Dakar.
Labor	3 labours by qualification (skilled, semi-skilled and unskilled) in 14 Senegalese regions and the rest of the world
Capital and Land	5 capital accounts (agricultural, non-agricultural, non-irrigated land, irrigated land and livestock),
Households	33 categories of representative households (regionalized): 5 quintiles of income in Dakar and 2 (rural and urban) in other regions.
Other institutions	3 accounts for enterprises, government, and the rest of the world.
Investment and savings	An investment savings account, 4 accounts allocating investments (roads, irrigation, other infrastructure, rest of investments)
Taxes	5 tax accounts (direct taxes, indirect taxes, sales taxes, Factor taxes and imports taxes)

Scenarios of tariff cuts (ratios)–The most sensitive products for Senegal are Mining, petroleum, cash crops, transport material, chemicals and food crops.



Africa's Scenarios of tariff cuts (ratios – The most sensitive products from rest of Africa are Mining products, Petroleum and Tobacco (processed).)



- Abrego, M. L., Amado, M. A., Gursay, T., Nicholls, G. P., & Perez-Saiz, H. (2019). *The African Continental Free Trade Agreement: welfare gains estimates from a general equilibrium model*. International Monetary Fund.
- Abrego, M. L., de Zamaroczy, M. M., Rosas, J.-N., Perez-Saiz, H., Nicholls, G. P., & Gursay, T. (2020). *The African Continental Free Trade Area: Potential Economic Impact and Challenges*. Technical Report International Monetary Fund.
- Boulanger, P., Dudu, H., Ferrari, E., & Mainar-Causapé, A. (2017). Matrice de comptabilité sociale désagrégée de l'économie sénégalaise en 2014. doi:10.2760/563430 (online), 10.2760/138165 (print).
- Depetris Chauvin, N., Ramos, M. P., & Porto, G. (2017). Trade, growth, and welfare impacts of the cfta in africa. In *CSAE Conference 2017: Economic Development in Africa* CONFERENCE.
- Gaulier, G., & Zignago, S. (2010). *BACI: International Trade Database at the Product-Level. The 1994-2007 Version*. Working Papers 2010-23 CEPII. URL: <http://www.cepii.fr/CEPII/fr/publications/wp/abstract.asp?NoDoc=2726>.
- Guimbard, H., Jean, S., Mimouni, M., & Pichot, X. (2012). Macmap-hs6 2007, an exhaustive and consistent measure of applied protection in 2007. *International Economics*, 130, 99–121.
- Hausmann, R., & Hidalgo, C. A. (2011). The network structure of economic output. *Journal of Economic Growth*, 16, 309–342.
- Hausmann, R., Hwang, J., & Rodrik, D. (2007). What you export matters. *Journal of economic growth*, 12, 1–25.
- Hidalgo, C., Klinger, B., Barabasi, A.-L., & Hausmann, R. (2007). The product space and its consequences for economic growth. In *APS March Meeting Abstracts* (pp. A22–006).
- Maliszewska, M., & Ruta, M. (2020). *The African Continental Free Trade Area: Economic and Distributional Effects*. World Bank Group.
- McDonald, S. (2009). A static applied general equilibrium model (stage). version 1: July 2007. department of economics & strategy.
- Teignier, M. (2018). The role of trade in structural transformation. *Journal of Development Economics*, 130, 45–65.
- UNECA (2019). *African Continental Free Trade Area: Questions & Answers*. Addis Ababa. Technical Report UNECA.