



ENhanced understanding of Trade Impacts
on Climate, industries, and the Environment

Reinforcing AGOA beyond renewal: A GTAP assessment of tariff and NTM reductions

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African Growth and Opportunity Act (AGOA)

- Nonreciprocal U.S. **trade preference** program
- Provides limited-tariff access to the U.S. market for **sub-Saharan Africa (SSA) exports**
- **Eligibility** criteria
- Established in **2000**
- Expired in September **2025**
- Extended to December **2026**

Source: CONGRESS.GOV



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Rules of Origin (ROO)

- Products must be imported **directly from the beneficiary** country into the U.S.
- Products must be “**grown, produced or manufactured**” of one or more of the beneficiary countries
- Value of materials produced in the beneficiaries + value of processing in the beneficiaries $\geq$ **35%** product's appraised entry value.
- **Specific** criteria for textile and apparel

Source: www.mauritiustrade.mu



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AGOA potential reinforcement

➤ Directions:

- Trade liberalization (in terms of import tariffs)
- Relaxation of non-tariff measures (NTMs)
- Expansion to North Africa

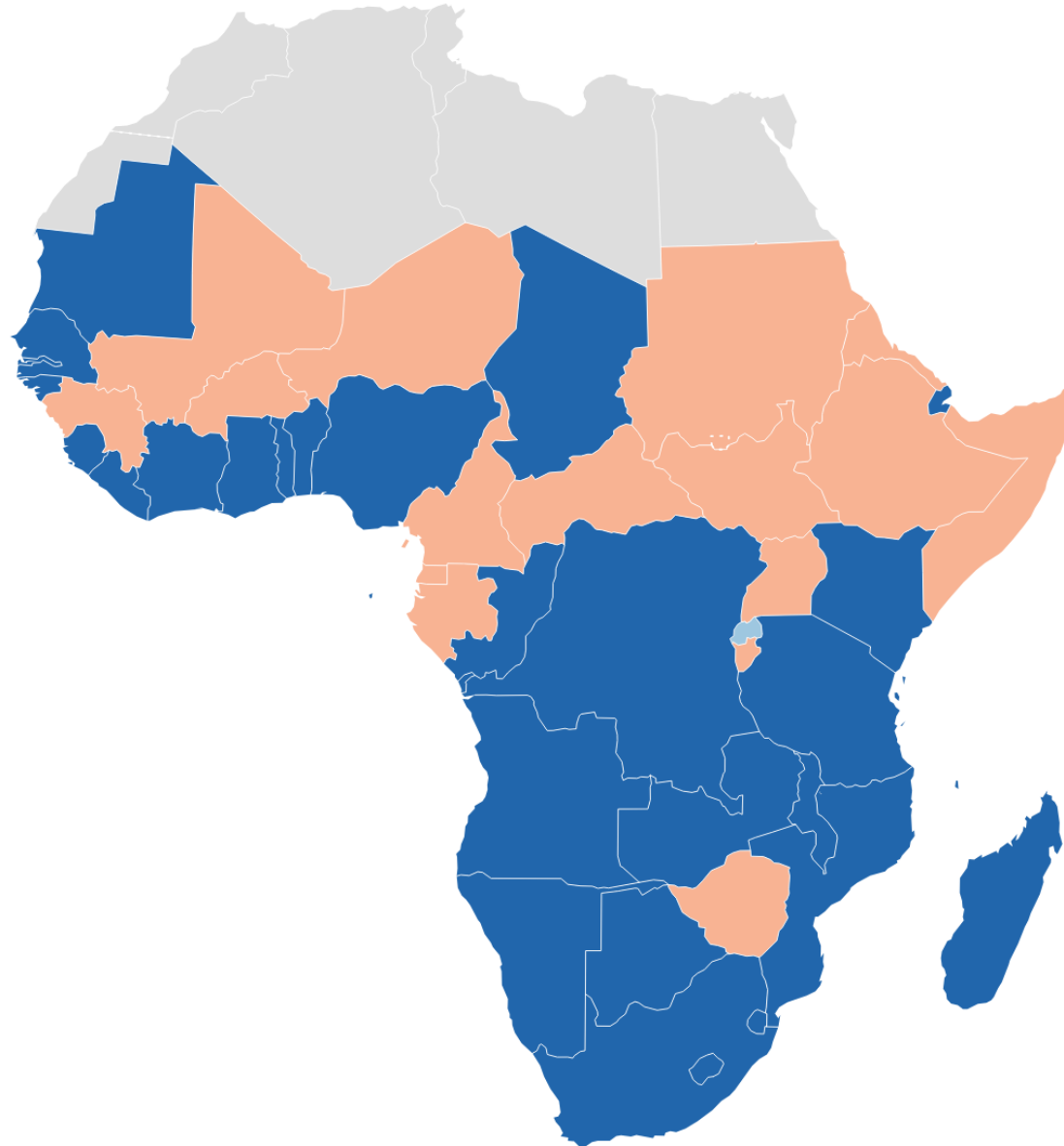
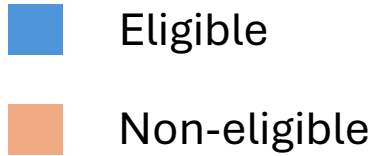
➤ Research questions:

- Rules of Origin (ROO) clauses
- Macroeconomic impacts



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Eligibility (2025)



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Created with Datawrapper

Setup

Model	GTAP standard version (v7)
Data Base	11
Geography	US, SSA, North Africa (2 nd part), other aggregate regions, ROW
Economy	10-sector aggregation
Auxiliary methods	1. Walmsley, T., & Strutt, A. (2021). <i>A comparison of approaches to modelling non-tariff measures</i>. Journal of Global Economic Analysis, 6(1), 1-33. 2. Kravchenko, A., Strutt, A., Utotham, C., & Duval, Y. (2022). <i>New price-based bilateral ad-valorem equivalent estimates of non-tariff measures</i>. Journal of Global Economic Analysis, 7(2).
Auxiliary tools	(i) R package (Kravchenko et al., 2022) (ii) GTAPv7axs (Walmsley & Strutt, 2021)



Sector aggregation



Reform scenarios

Case	Scenario code	Tariffs	NTMs	Coverage
Case 1				SSA, USA
	T	$t = 0$	–	Bilateral tariff elimination
	T_NTM	$t \downarrow 50\%$	$NTM_{SSA \rightarrow USA} \downarrow 50\%$	Partial tariff + NTM reduction (<i>ams/axs</i> mode)
	T_techNTM	$t \downarrow 50\%$	$techNTM_{SSA \rightarrow USA} \downarrow 50\%$	Partial tariff + tech NTM reduction (<i>ams/axs</i> mode)
Case 2				SSA, USA, North Africa
	Harm_T	$t_{NA} = t_{SSA}$	–	Tariff harmonization
	Harm_T_NTM	$t_{NA} = t_{SSA}$	$NTM_{NA} = NTM_{SSA}$	Tariff + NTM harmonization

NTM estimation

- Based on:

Kravchenko, A., Strutt, A., Utotham, C., & Duval, Y. (2022). New price-based bilateral ad-valorem equivalent estimates of non-tariff measures. Journal of Global Economic Analysis, 7(2).

- **R-script** to aggregate AVEs to GTAP sectors and regions.
- Separates into **two types**: technical and non-technical measures.

Source: GTAP Virtual Seminar Series, Vol 4, No 1 (2023)



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NTMs incorporation

- *ams* mode: NTMs impact costs on the importer side
- *axs* mode: NTMs impact production costs, introduced in:

Walmsley, T., & Strutt, A. (2021). A comparison of approaches to modelling non-tariff measures. Journal of Global Economic Analysis, 6(1), 1-33.

- Change module: *GTAPUV7* → *GTAPv7axs*

Source: GTAP Virtual Seminar Series, Vol 4, No 1 (2023)



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Case 1

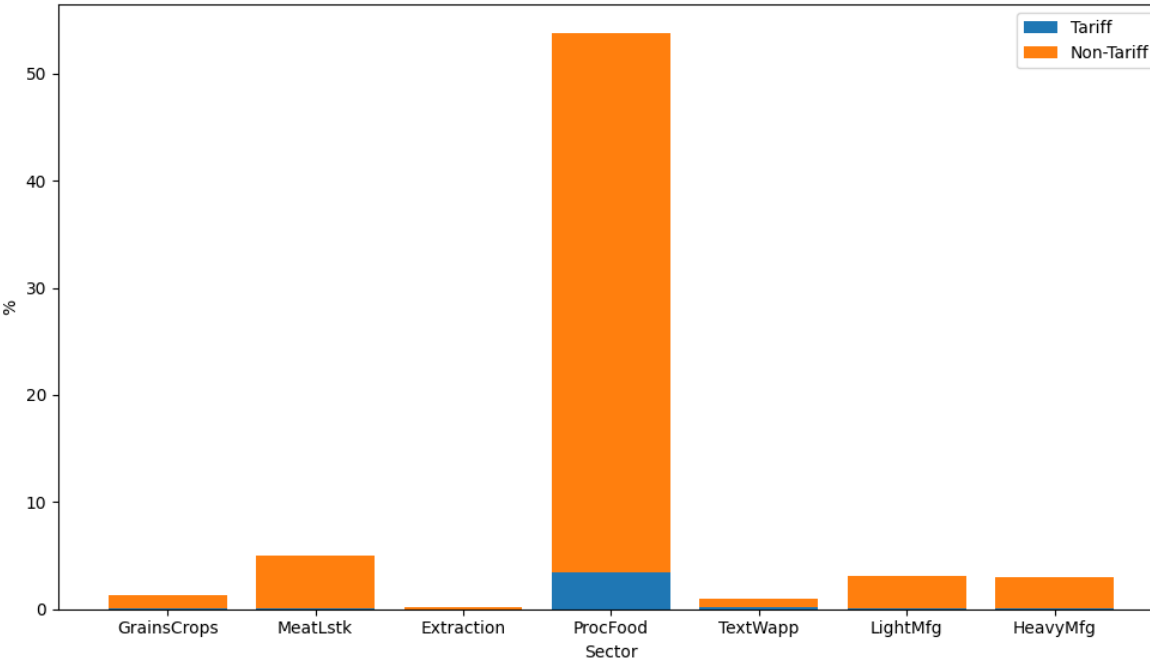
SSA – USA interaction



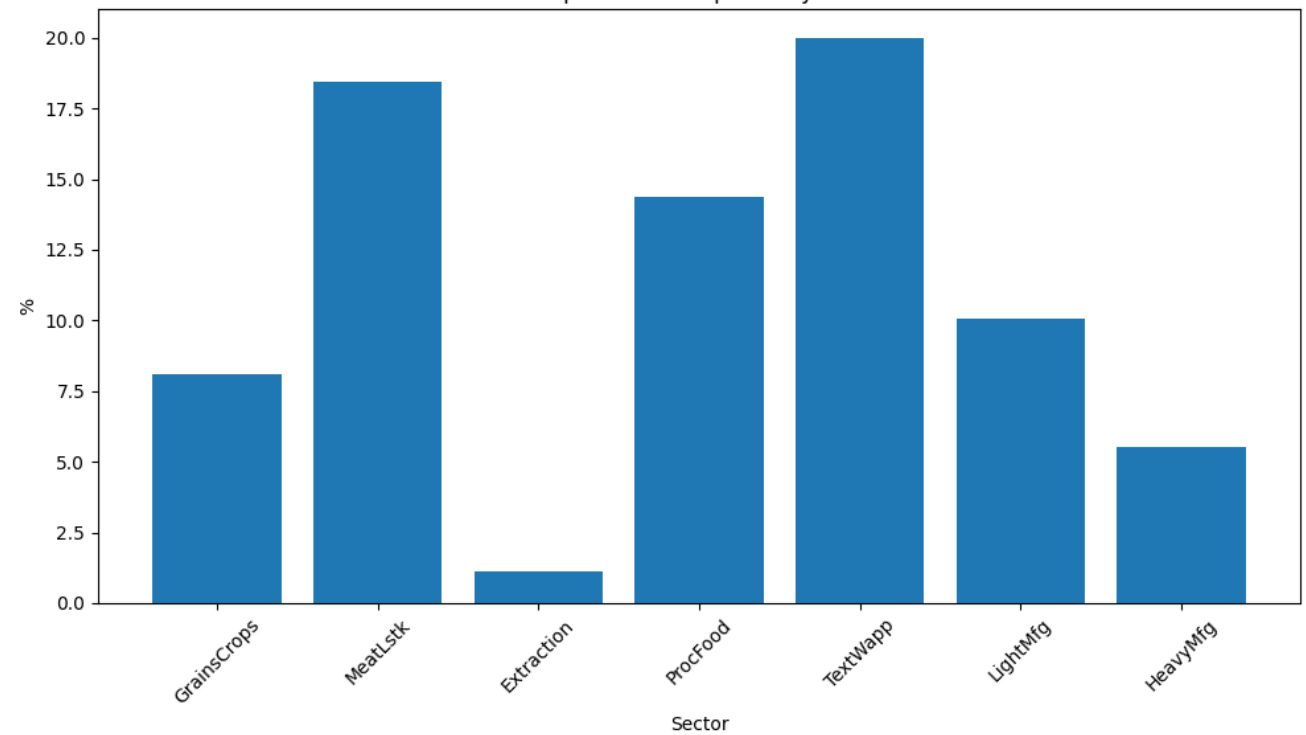
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Base Data

Tariffs and NTMs imposed by USA



Import tariffs imposed by SSA

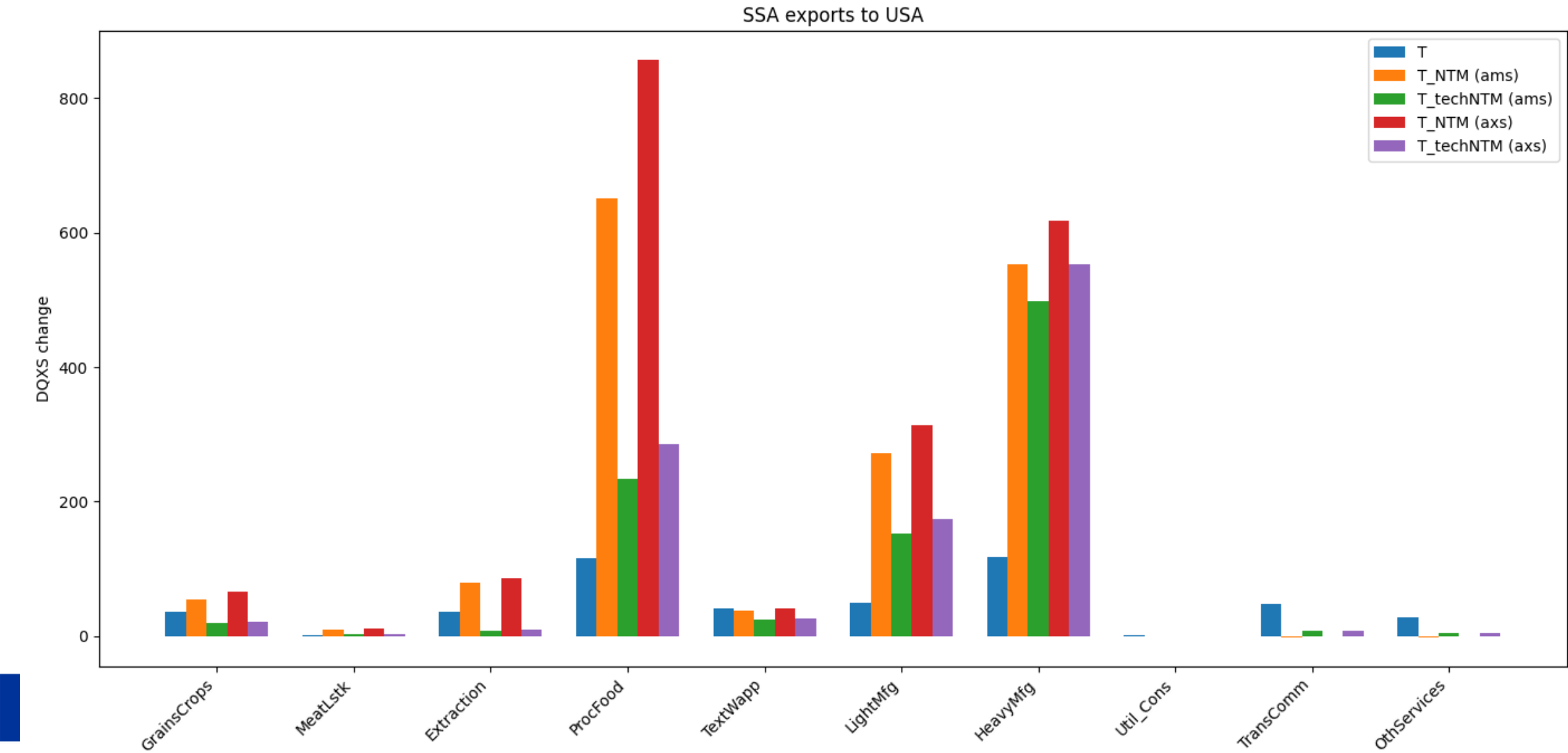


- $rTMS(\text{services}) = 0$
- $AVE \text{ of } NTM(\text{services}) = 0$



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SSA exports to USA



Exports to SSA (DQXS)

Exports to Sub-Saharan Africa (DQXS)

	USA	EU	RWEurope	NAfrica	RMENAfr	RoW
GrainsCrops	474.49	-37.41	-0.32	-0.66	-6.56	-199.36
MeatLstk	946.81	-163.73	-0.32	-1.16	-11.3	-177.72
Extraction	20.52	-0.43	-0.02	-0.02	-2.81	-0.86
ProcFood	430.79	-84.59	-4.68	-7.57	-32.71	-159.82
TextWapp	608.03	-32.08	-0.57	-0.99	-14.76	-417.63
LightMfg	3138.63	-581.45	-16.41	-8.62	-111.84	-1422.77
HeavyMfg	3797.8	-884.96	-44.13	-28.83	-379.37	-1498.5
UtilCons	-4.31	-9.37	-0.97	-0.52	-2.41	-10.97
TransComm	-43.82	-37.98	-3.57	-1.27	-9.19	-51.74
OthServices	-59.67	-22.12	-3.54	-0.3	-4.13	-29.33

Scenario T: ROO likely to hold (imports from all regions to SSA decline)



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Exports to SSA (ams, axs)

Partial tariff + NTM reduction (ams)

	USA	EU	RWEurope	NAfrica	RMENAfr	RoW
GrainsCrops	219.00	-10.29	-0.09	-0.18	-1.81	-53.87
MeatLstk	348.66	-60.66	-0.12	-0.43	-4.19	-65.68
Extraction	10.16	0.84	0.03	0.04	4.33	1.12
ProcFood	181.51	-16.56	-0.93	-1.49	-6.44	-30.95
TextWapp	196.23	-8.47	-0.15	-0.26	-3.91	-109.34
LightMfg	1320.44	-211.95	-5.98	-3.16	-40.96	-516.63
HeavyMfg	1726.65	-326.02	-16.30	-10.78	-141.52	-549.24
UtilCons	-0.19	2.35	0.21	0.14	0.63	2.57
TransComm	-3.31	8.19	0.64	0.31	2.17	10.67
OthServices	-4.17	6.49	0.85	0.10	1.33	8.11

Partial tariff + techNTM reduction (ams)

	USA	EU	RWEurope	NAfrica	RMENAfr	RoW
GrainsCrops	215.94	-13.90	-0.12	-0.25	-2.44	-73.64
MeatLstk	346.84	-62.77	-0.12	-0.44	-4.33	-68.08
Extraction	10.12	0.72	0.02	0.03	3.71	0.92
ProcFood	180.25	-26.29	-1.46	-2.36	-10.19	-49.57
TextWapp	195.81	-9.76	-0.17	-0.30	-4.49	-126.82
LightMfg	1315.05	-228.35	-6.45	-3.40	-44.03	-557.80
HeavyMfg	1718.72	-355.73	-17.76	-11.69	-153.59	-600.97
UtilCons	-0.87	-0.28	-0.05	-0.01	-0.06	-0.45
TransComm	-9.83	-2.09	-0.27	-0.05	-0.39	-3.16
OthServices	-13.25	-0.28	-0.15	0.00	0.01	-0.68

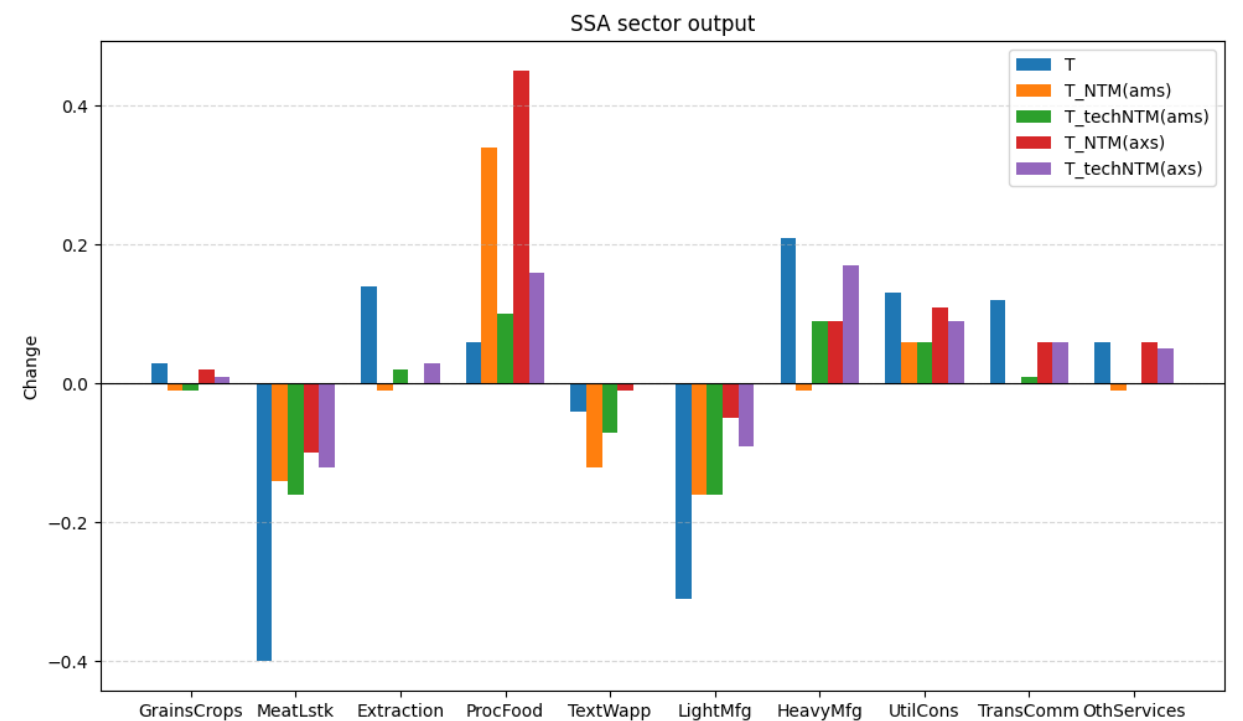
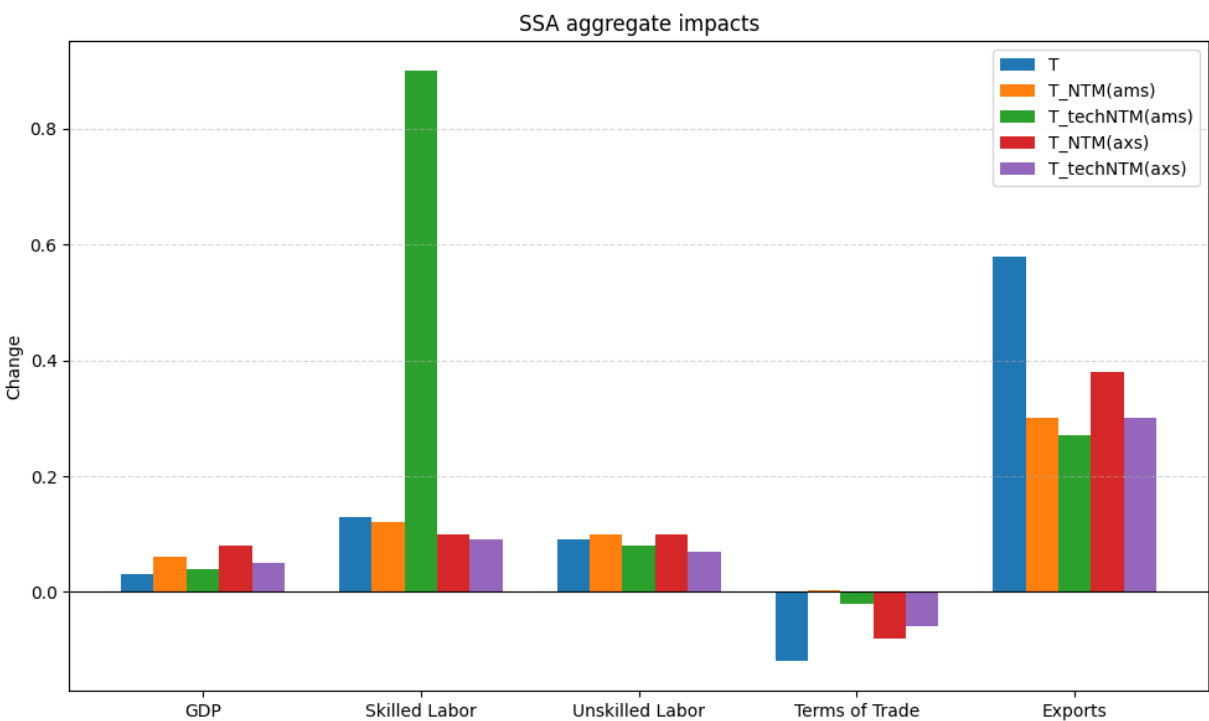
Partial tariff + NTM reduction (axs)

	USA	EU	RWEurope	NAfrica	RMENAfr	RoW
GrainsCrops	218.66	-10.71	-0.09	-0.19	-1.88	-56.11
MeatLstk	348.45	-60.91	-0.12	-0.43	-4.21	-65.96
Extraction	10.15	0.81	0.03	0.04	4.17	1.08
ProcFood	181.36	-17.75	-0.99	-1.59	-6.89	-33.20
TextWapp	196.18	-8.62	-0.15	-0.27	-3.98	-111.38
LightMfg	1319.81	-213.91	-6.04	-3.19	-41.32	-521.44
HeavyMfg	1725.65	-329.92	-16.49	-10.90	-143.07	-555.84
UtilCons	-0.27	2.01	0.18	0.12	0.54	2.18
TransComm	-4.10	6.91	0.52	0.26	1.86	8.97
OthServices	-5.28	5.65	0.73	0.09	1.16	7.04

Partial tariff + techNTM reduction (axs)

	USA	EU	RWEurope	NAfrica	RMENAfr	RoW
GrainsCrops	215.83	-14.03	-0.12	-0.25	-2.46	-74.37
MeatLstk	346.76	-62.86	-0.12	-0.44	-4.34	-68.19
Extraction	10.11	0.68	0.02	0.03	3.48	0.86
ProcFood	180.20	-26.72	-1.48	-2.40	-10.36	-50.37
TextWapp	195.79	-9.82	-0.17	-0.30	-4.52	-127.65
LightMfg	1314.78	-229.18	-6.47	-3.41	-44.18	-559.83
HeavyMfg	1718.25	-357.57	-17.85	-11.74	-154.32	-604.07
UtilCons	-0.91	-0.43	-0.06	-0.02	-0.10	-0.62
TransComm	-10.16	-2.63	-0.32	-0.07	-0.52	-3.88
OthServices	-13.71	-0.64	-0.21	0.00	-0.05	-1.13

SSA impacts



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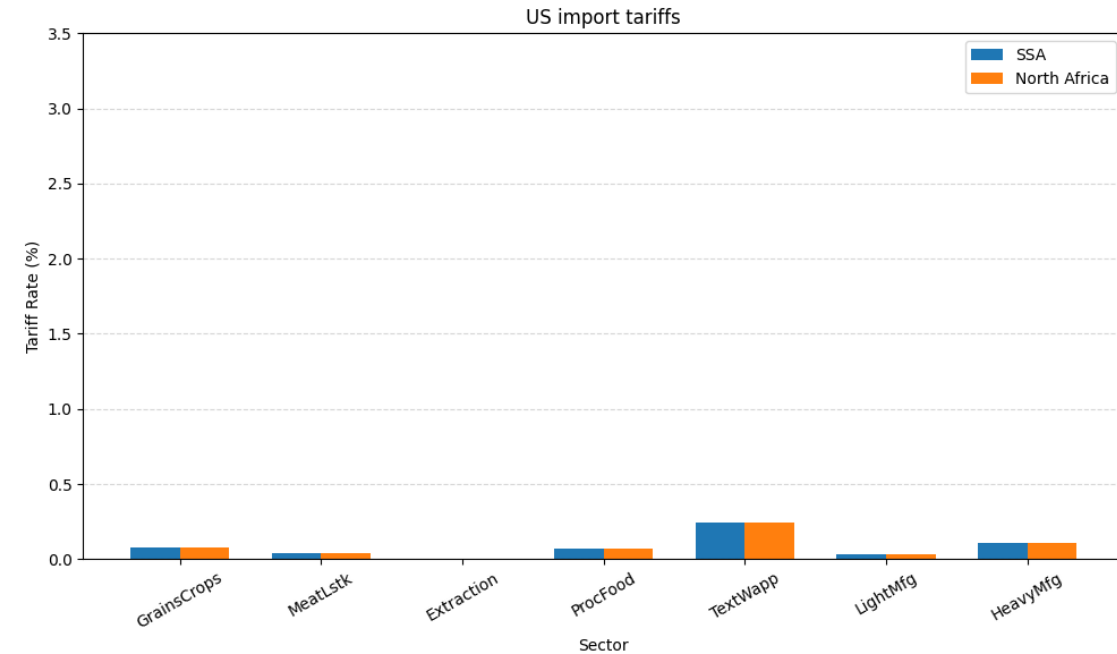
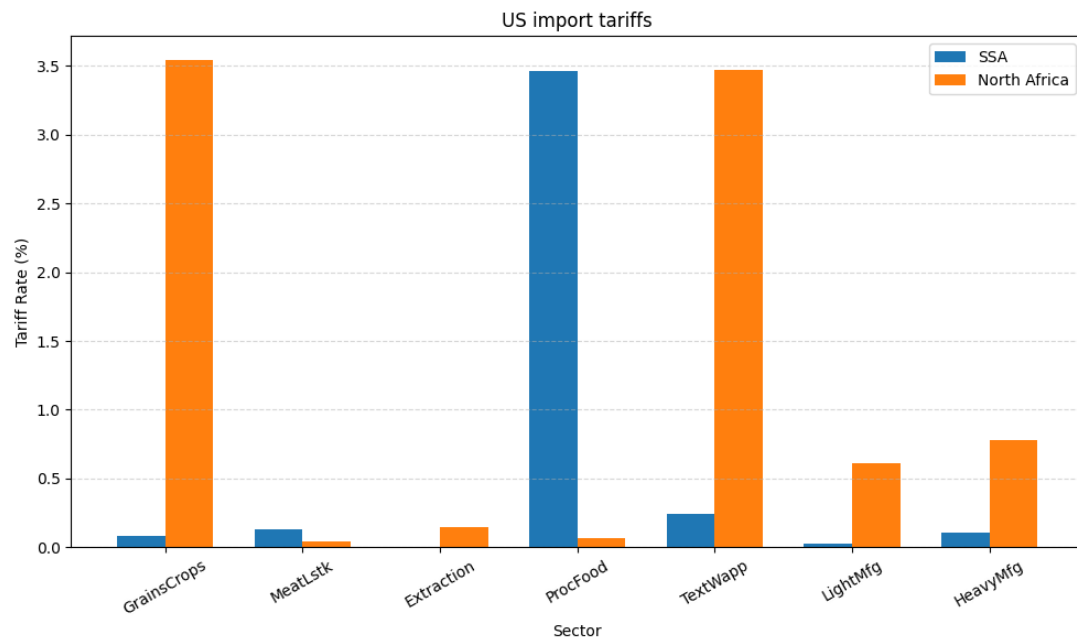
Case 2

North Africa inclusion



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Tariff harmonization



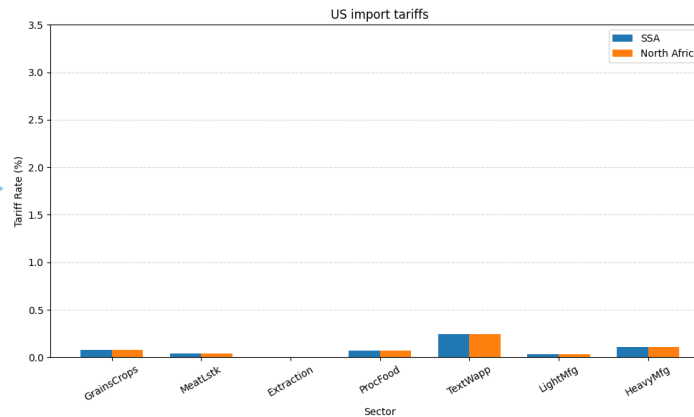
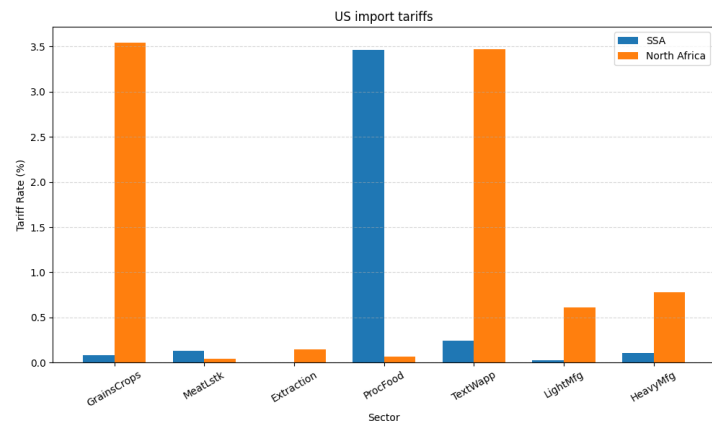
Scenario: **Harm_T** (harmonization of US import tariff rates imposed on SSA and NA products)

Principle: **keep the lower**



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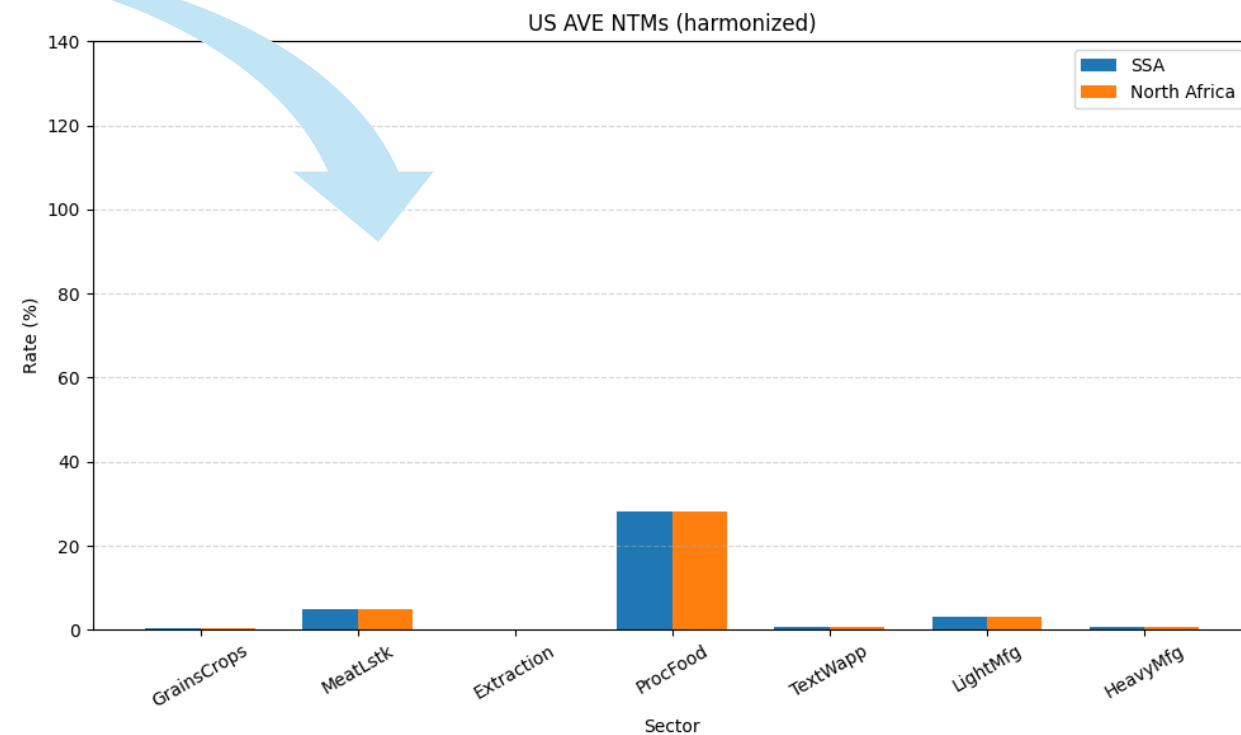
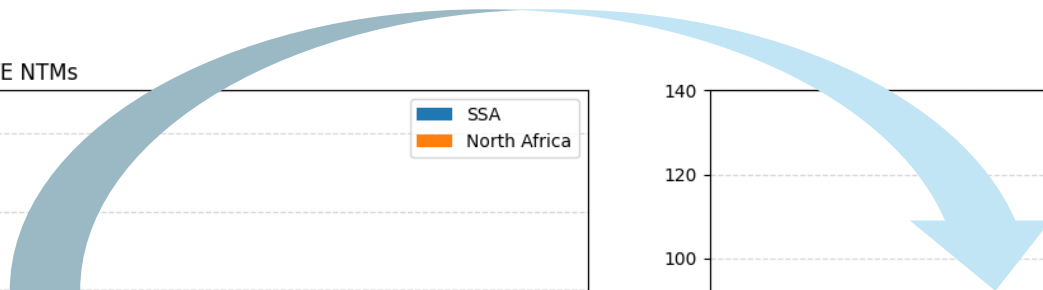
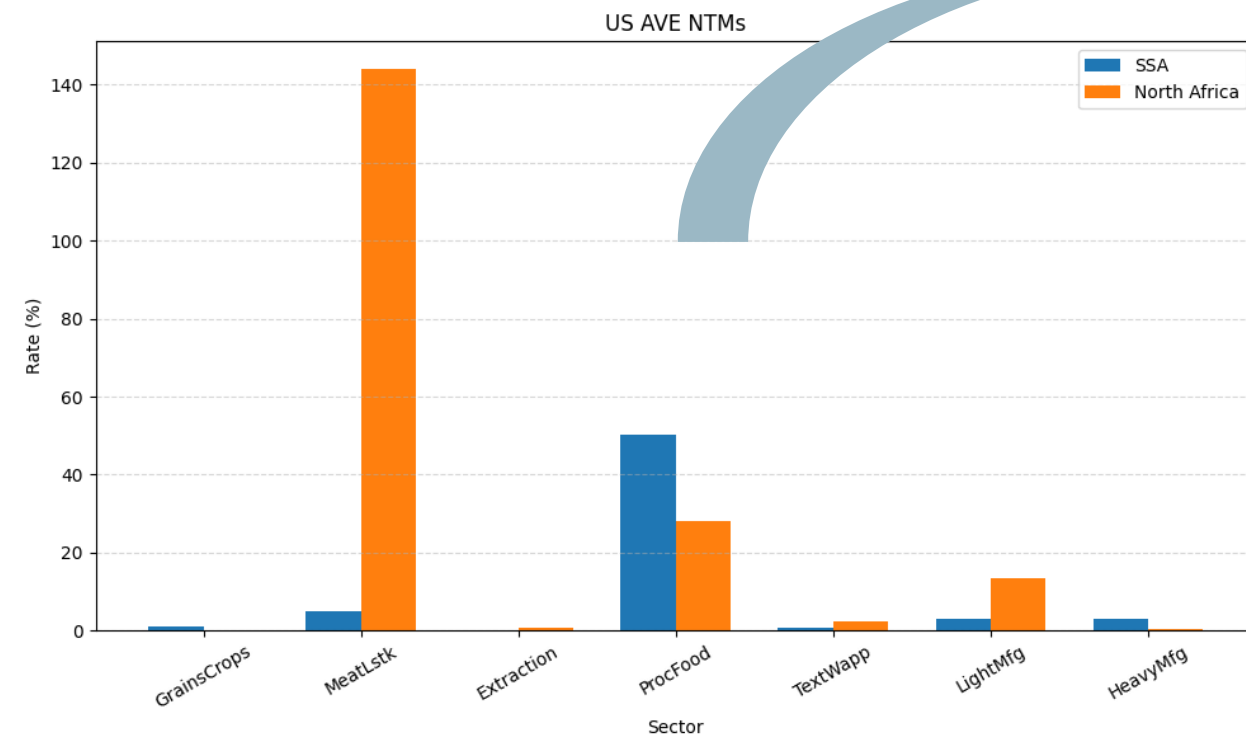
Tariff + NTM harmonization



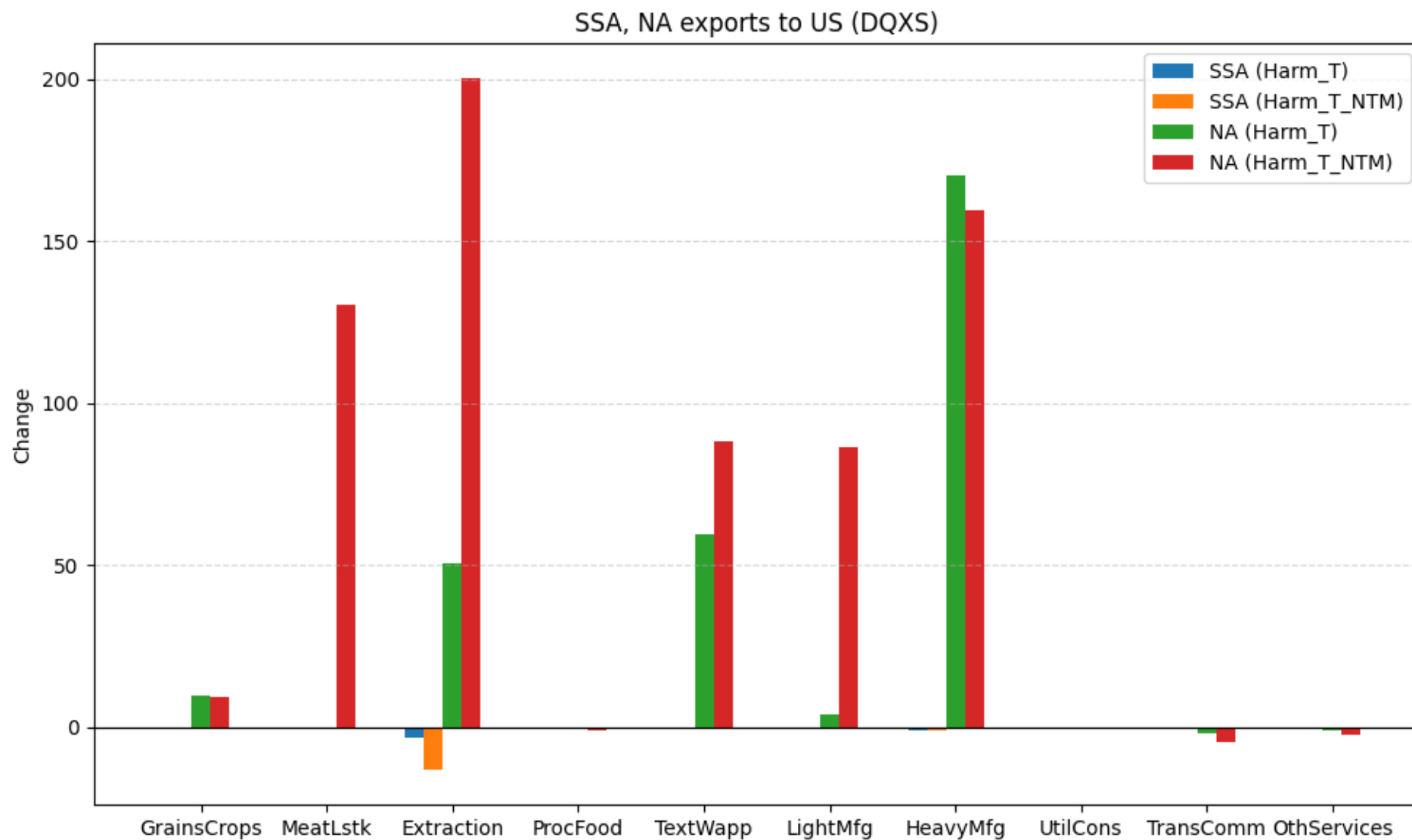
Scenario: **Harm_T_NTM**

(harmonization of US import tariff rates + NTMs imposed on SSA and NA products)

Principle: **keep the lower**



SSA, NA exports to US



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Exports to NA and SSA

Exports to NA (tariff harmonization)

	USA	EU	RWEurope	RMENAfr	SSA	RoW
GrainsCrops	0.50	1.69	0.00	0.24	0.18	3.74
MeatLstk	0.02	0.86	0.01	0.03	0.00	0.32
Extraction	0.54	0.40	0.02	0.45	0.16	1.15
ProcFood	0.19	2.28	0.11	0.80	0.09	3.58
TextWapp	0.12	6.50	0.03	2.23	0.00	4.81
LightMfg	0.41	11.19	0.06	1.57	0.05	4.86
HeavyMfg	2.05	25.72	0.74	4.91	0.07	10.89
UtilCons	0.05	1.09	0.06	0.27	0.04	0.47
TransComm	1.35	4.02	0.39	0.71	0.20	2.15
OthServices	1.65	2.89	0.30	0.55	0.10	1.46

Exports to NA (tariff and NTM harmonization)

	USA	EU	RWEurope	RMENAfr	SSA	RoW
GrainsCrops	1.54	5.26	0.00	0.74	0.57	11.59
MeatLstk	0.09	3.99	0.02	0.16	0.02	1.48
Extraction	1.12	0.78	0.04	0.92	0.32	2.34
ProcFood	0.50	6.10	0.28	2.13	0.23	9.55
TextWapp	0.18	9.86	0.04	3.39	0.01	7.36
LightMfg	0.97	26.66	0.15	3.76	0.12	11.54
HeavyMfg	3.71	45.77	1.32	8.87	0.13	19.63
UtilCons	0.11	2.35	0.12	0.59	0.08	1.02
TransComm	2.71	8.12	0.79	1.44	0.41	4.33
OthServices	3.38	5.98	0.63	1.14	0.21	3.00

Exports to SSA (tariff harmonization)

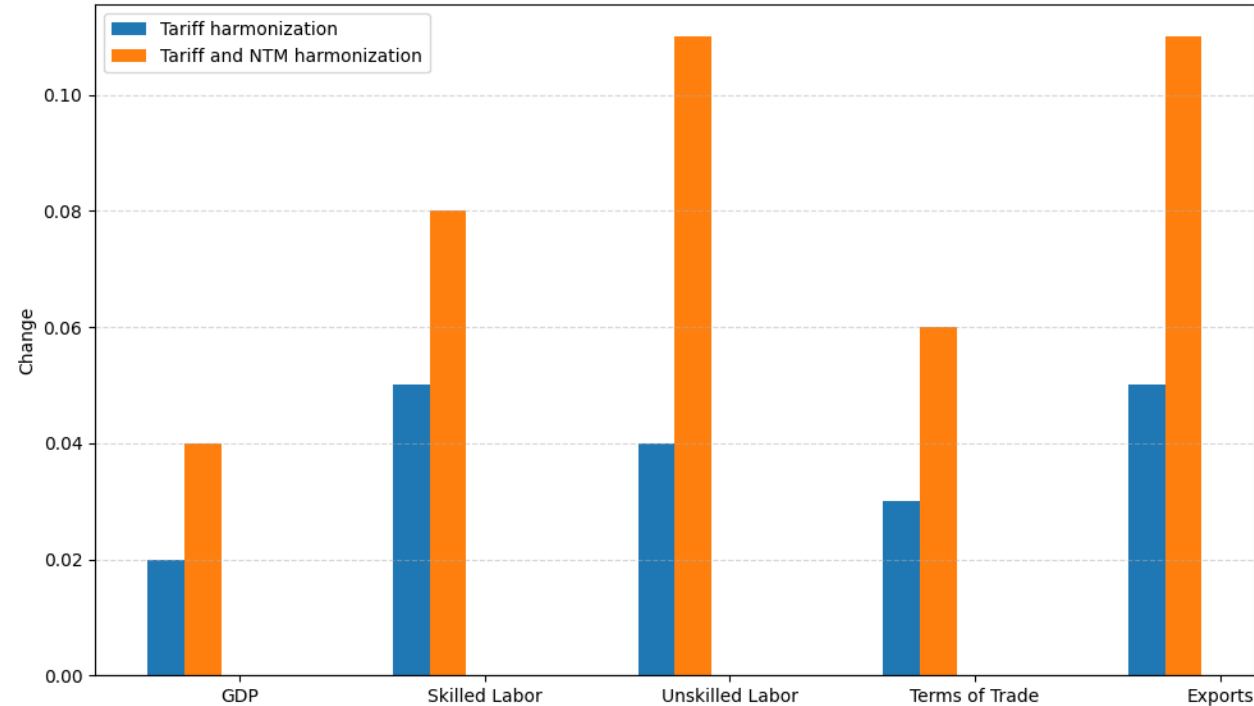
	USA	EU	RWEurope	NAfrica	RMENAfr	RoW
GrainsCrops	0.03	-0.04	0.00	-0.06	0.00	0.15
MeatLstk	0.02	-0.01	0.00	-0.03	0.00	0.04
Extraction	0.01	-0.07	0.00	-0.06	-0.01	0.02
ProcFood	0.02	0.08	0.00	-1.00	0.03	0.43
TextWapp	0.01	-0.04	0.00	-0.11	-0.02	0.25
LightMfg	0.11	-0.14	0.00	-0.58	-0.04	0.84
HeavyMfg	0.50	-0.06	0.02	-3.06	-0.11	2.33
UtilCons	0.02	0.02	0.00	-0.25	0.00	0.08
TransComm	0.13	0.06	0.01	-0.72	0.00	0.34
OthServices	0.12	0.00	0.00	-0.21	-0.01	0.17

Exports to SSA (tariff and NTM harmonization)

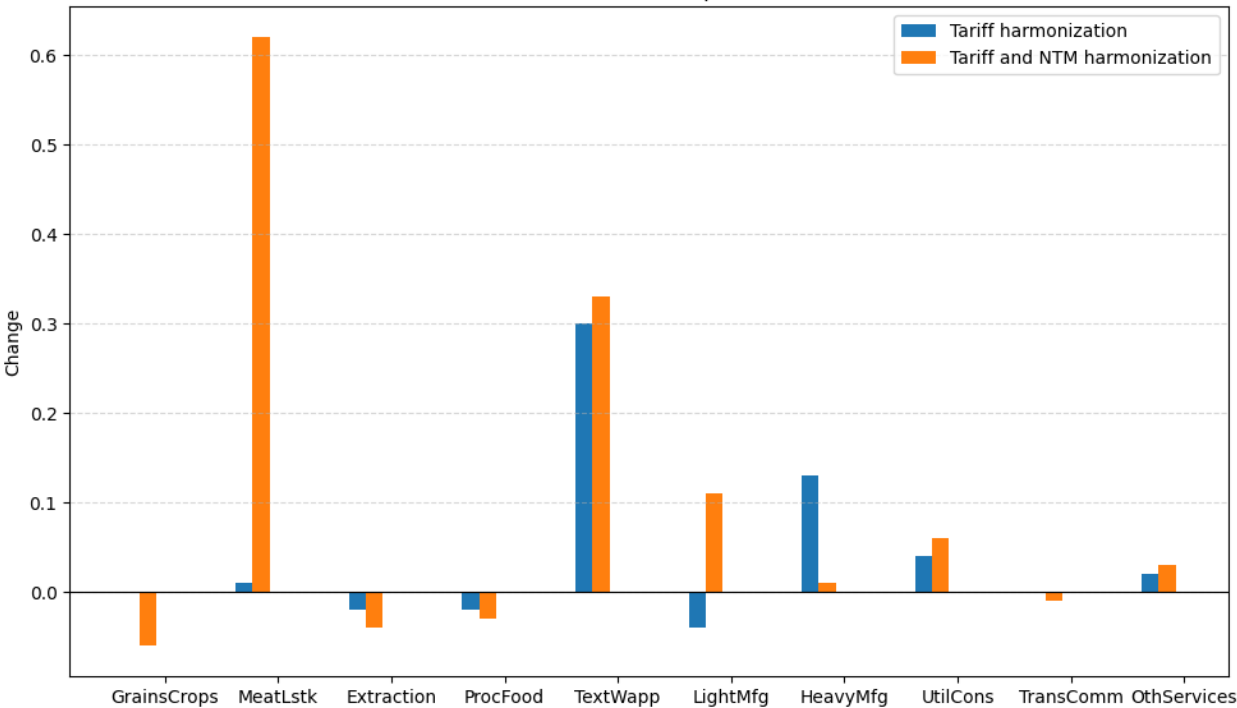
	USA	EU	RWEurope	NAfrica	RMENAfr	RoW
GrainsCrops	0.08	-0.11	0.00	-0.18	-0.01	0.46
MeatLstk	0.14	-0.06	0.00	-0.08	0.00	0.12
Extraction	0.04	-0.21	-0.01	-0.15	0.07	0.06
ProcFood	0.05	0.18	0.01	-2.46	0.09	1.01
TextWapp	0.01	-0.09	0.00	-0.26	-0.03	0.51
LightMfg	0.17	-0.35	-0.01	-1.32	-0.08	1.68
HeavyMfg	1.04	-0.47	0.03	-6.94	0.01	4.82
UtilCons	0.03	0.04	0.01	-0.58	0.01	0.16
TransComm	0.20	0.12	0.01	-1.60	0.01	0.68
OthServices	0.13	0.00	0.00	-0.47	-0.02	0.32

Aggregate and sector impacts

NA aggregate impacts



NA sector output



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Some conclusions

➤ ROO:

- **ROO is likely to be met for SSA:** SSA exports to US tend to rise under all reinforcement scenarios. At the same time, imports from the rest regions tend to decline (except for “Extraction”).
- **ROO is likely to not be met for North Africa:** when including North African economies, exports to US rise. At the same time, imports in NA from the rest regions rise.

➤ Macro impacts:

- Positive impact on GDP (insignificantly negative for SSA when including North Africa).
- The overall impact on jobs is positive.
- Output: food sectors benefit the most (SSA); different picture for NA: livestock and textile sectors benefit most.
- Terms of trade: positive effect for US and NA; insignificantly negative for SSA.



Study limitations and future directions





Thank you!