General Equilibrium analysis of NTMs on Exports: A case of SA’s Citrus

By

Phelelani Sibiya

MSc Student

28th Annual Conference on Global Economic Analysis (GTAP)

Radisson Blu Hotel & Convention Centre
Kigali, Rwanda
25-27 June 2025

PRESENTATION OUTLINE

- Background
- Methodology
- Results and discussions
- Conclusions and Recommendation(s)

BACKGROUND

- The GATTS was formed in the late 1940 to govern international trade,
- Since its formation, the GATTS focused on tariffs and in the later rounds started to focus in non-tariff measures,
- AT the conclusion of the Uruguay Round the GATTS changed into the WTO
- formation of the WTO and multiple rounds of negotiations to liberalize global trade.
- Shift tariff reduction to non-tariff measures (NTMs)
- **NTMs** Defined: Policy measures beyond tariffs that affect trade.
- The study aims to quantify the economywide effects of increasing NTMs in key markets~ explores a case of SA's citrus exports.

Figure 1. Chapter organization in the NTM classification

Import-related measures	Technical measures	A	Sanitary and Phytosanitary (SPS) measures
		B	Technical barriers to trade (TBT)
		C	Pre-shipment inspections and other formalities
	Non-technical measures	D	Contingent trade-protective measures
		E	Non-automatic licensing, quotas, prohibitions and quantity-control measures
		F	Price-control measures, including additional taxes and charges
		G	Finance measures
		H	Measures affecting competition
		I	Trade-related investment measures
		J	Distribution restrictions
		K	Restrictions on post-sales services
		L	Subsidies (excl. export subsidies)
		M	Government procurement restrictions
		N	Intellectual property
		O	Rules of origin
Export-related measures		P	Export-related measures

METHODOLOGY

GTAP Model

- Standard static GTAP model
- Database Version 10 (2014 base year)
- 141 regions (aggregated into 3 regions i.e., SA, EU and ROW)
- 65 commodities (aggregated into 12 commodities).

Closures and Shocks

- Long run closure:

I. endogenize wage rate and exogenize labour endowment.

II. Endogenized capital supply fix the ROR.

“Shock ams("citrus","SA","EU_27")”

- 10%, 20% and 50 % NTMs increase.

SplitCom

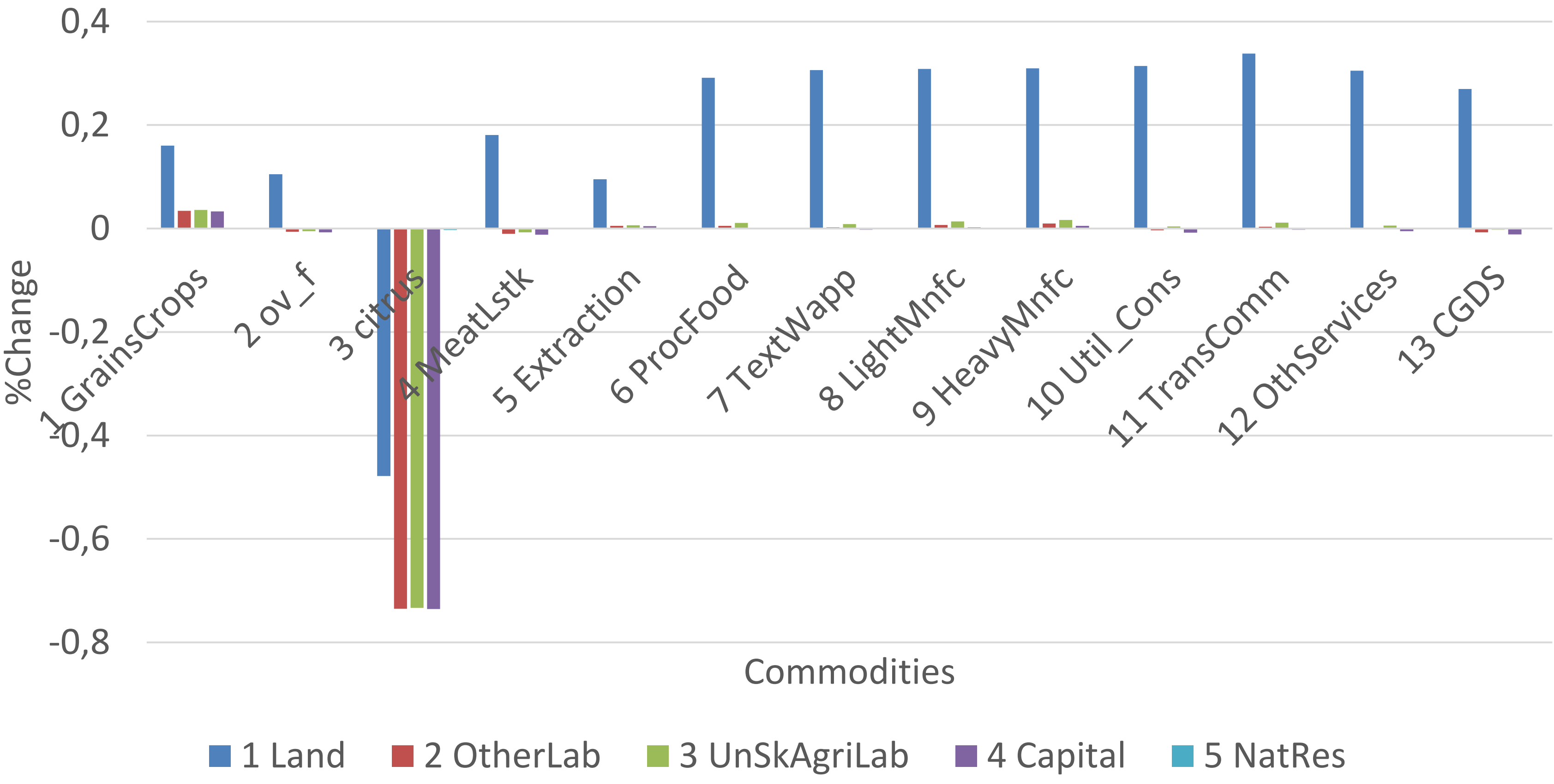
- A set of programs aimed at facilitating the addition of sectors to a standard GTAP Data Base
- Designed to work with the 'classic' data format used by Version 6 of the GTAP mode

RESULTS

Citrus Aggregate exports by region			
*qxw(citrus**)*	NTM10	NTM20	NTM50
SA	-0,151549	-0,301888	-0,745755
EU	0,019826	0,039484	0,097468
ROW	0,004431	0,008826	0,021793
	Quantity produced		
*qo(citrus**)*			
SA	-0,142094	-0,283053	-0,699229
EU	0,019511	0,038857	0,095918
ROW	0,002213	0,004407	0,010884
	Trade balance		
*DTBALi(citrus**)*			
SA	-5,538,275	-11,030,297	-27,233,469
EU	2,466,628	4,912,869	12,131,246
ROW	2,853,686	5,683,725	14,034,281
	Supply Price		
*ps(citrus**)*			
SA	-0,014505	-0,028876	-0,071207
EU	0,002204	0,004390	0,010837
ROW	0,000375	0,000748	0,001846
	Domestic sales		
*qds(citrus**)*			
SA	0,002128	0,004236	0,010439
EU	0,011821	0,023542	0,058116
ROW	0,000138	0,000275	0,000680
	Utility		
u			
SA	-0,000854	-0,001700	-0,004195
EU	-0,000047	-0,000094	-0,000232
ROW	0,000001	0,000001	0,000003

CONTI..

Demand for factors of production (for 10%, 20% and 50% NTMs Scenarios):



CONCLUSIONS

- The results offer policy insights about the impact of NTMs.
- Following these policy shocks, the results indicates that exporting countries are worse of.
- Increasing NTMs reduces welfare effect, aggregate exports, quantity produced and increase supply price.
- Increasing NTMs reduces labour demand for exporting countries