

GTAP

Small Group Project
EU-South Africa FTA

Outline

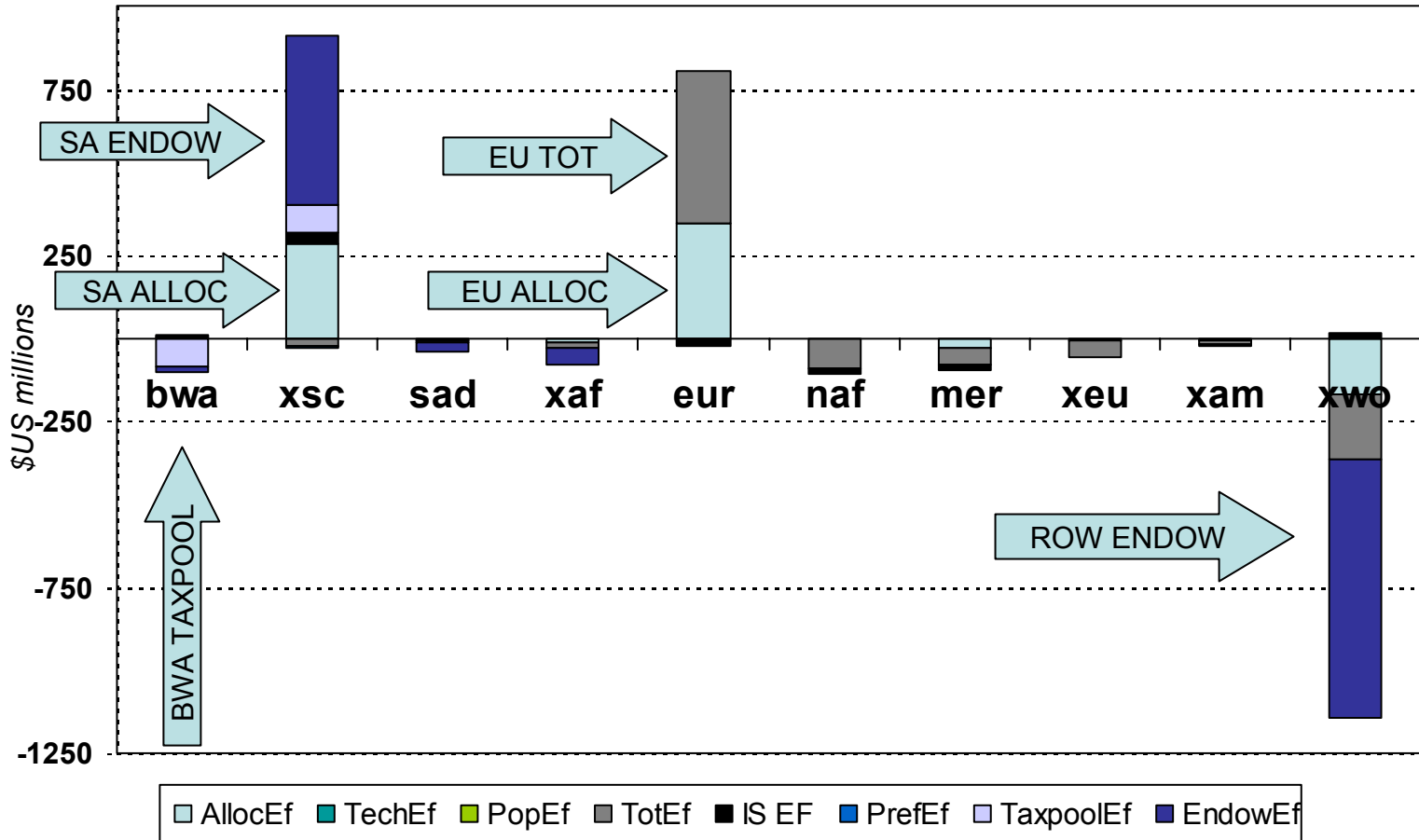
- Introduction EU-SA FTA: Main Simulation
 - Scott McDonald and Terrie Walmsley, “Bilateral Free Trade Agreements and Customs Unions: The Impact of the EU-Republic of South Africa Trade Agreement on Botswana”
 - Background & Results
- EU-SA FTA: Extensions
 - Unskilled labor closure effect and fixed real wage
 - Segregating agriculture and industry liberalization
 - Partial agriculture liberalization and EU expansion
 - EU-SADC FTA and fixed real wage
 - NAFTA-SA FTA (post EU-SA FTA)
- Conclusion

EU-SA FTA: main simulation

- Motivation
- Model – key aspects
 - Version
 - 10 Regions by 10 Traded Commodities
 - 5 Endowment commodities
 - Closure
 - Standard neoclassical GE closure
 - Integration of African and Botswana “realities”
 - Shocks
 - Asymmetrical

EU-SA FTA: main simulation

EU-SA FTA: Full Liberalization



EU-SA FTA: main simulation

Change in Commodity Exports (\$Usm)

	1 bwa	2 xsc	3 sad	5 eur
1 crops	0	280.6	7.5	-109
2 aag	0.7	17.6	0.2	-0.2
3 mine	0	-49.5	8.8	-24.1
4 food	-10.7	2141	-29.7	458.1
5 tex	2.7	176.8	-10.5	312.7
6 hman	-2.3	324.5	-7.5	254.9
7 lman	-35.1	431.8	-4.8	1202.9
8 utils	0.1	-3.3	1.1	-12.8
9 cns	0.2	0.2	0.2	-16
10 serv	5.9	-19.8	10.5	-501

Change in Commodity Imports (\$Usm)

	1 bwa	2 xsc	3 sad	5 eur
1 crops	-3.2	60.3	-2.5	65.9
2 aag	-0.5	12.5	-0.4	7
3 mine	-0.4	-2.7	-0.8	5.2
4 food	3.9	1064.7	-1.8	805.9
5 tex	0.6	208.6	-1.7	143
6 hman	-13.2	506.3	-5.8	284.5
7 lman	0.1	1343	-6.4	545
8 utils	-0.2	0	-0.9	5.4
9 cns	-0.1	1.5	-0.1	10.5
10 serv	-2.8	1.7	-6.4	241.9

Percent change in endowment price in S.A.

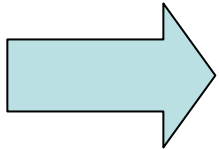
pfe[**xsc]	crops	aag	mine	food	tex	hman	lman	utils	cns	serv
Land	29.06	27.23								
SkLab	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Capital	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
NatRes	32.42		-0.29							

Percent change in endowment price in bwa

pfe[**bwa]	crops	aag	mine	food	tex	hman	lman	utils	cns	serv
Land	-4.55	-8.18								
SkLab	-0.98	-0.98	-0.98	-1	-1	-0.98	-1	-1	-1	-1
Capital	-1.17	-1.17	-1.17	-1.2	-1.2	-1.17	-1.2	-1.2	-1.2	-1.2
NatRes	21.43		6.88							

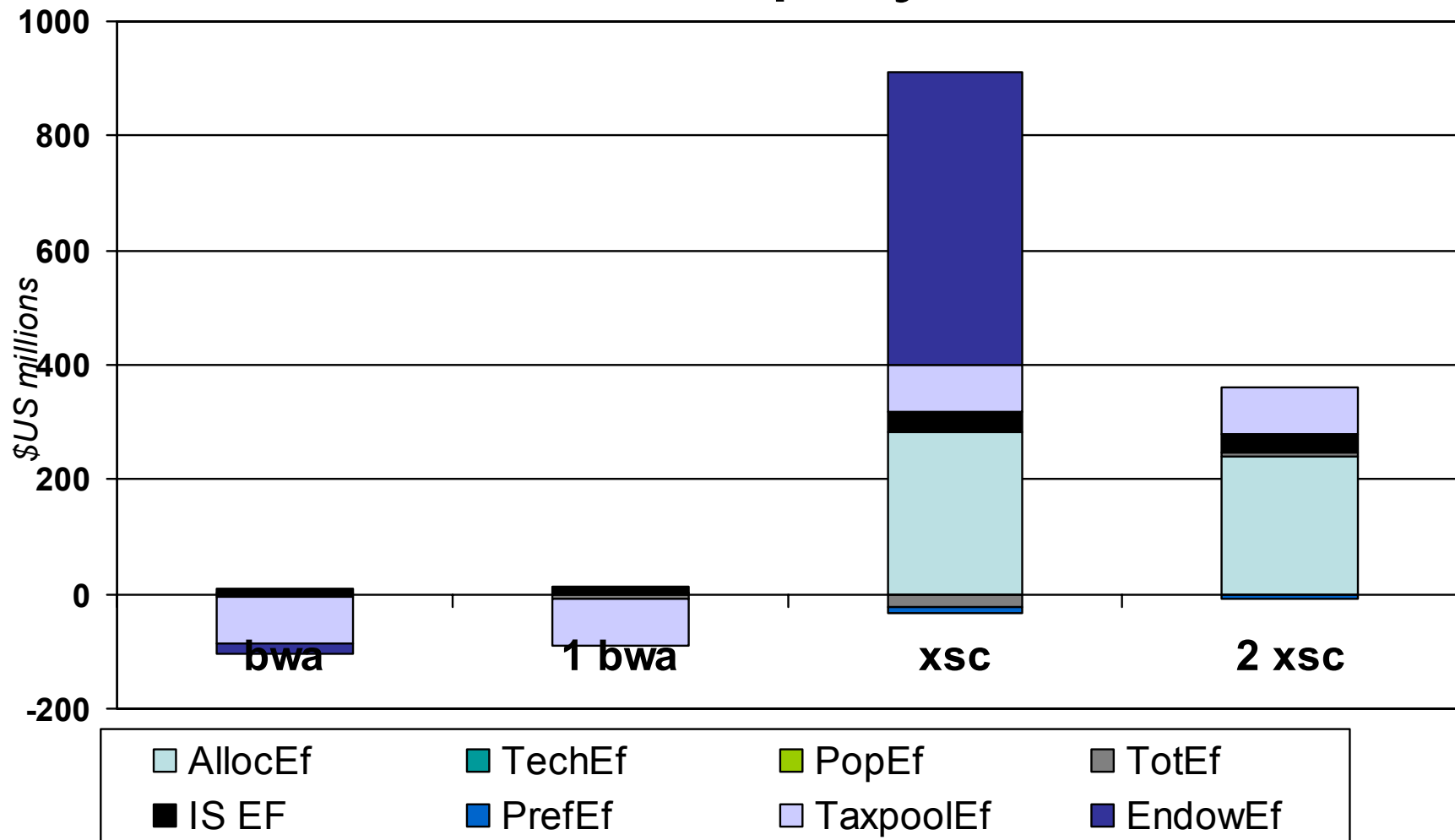
Outline

- EU-SA FTA: Extensions

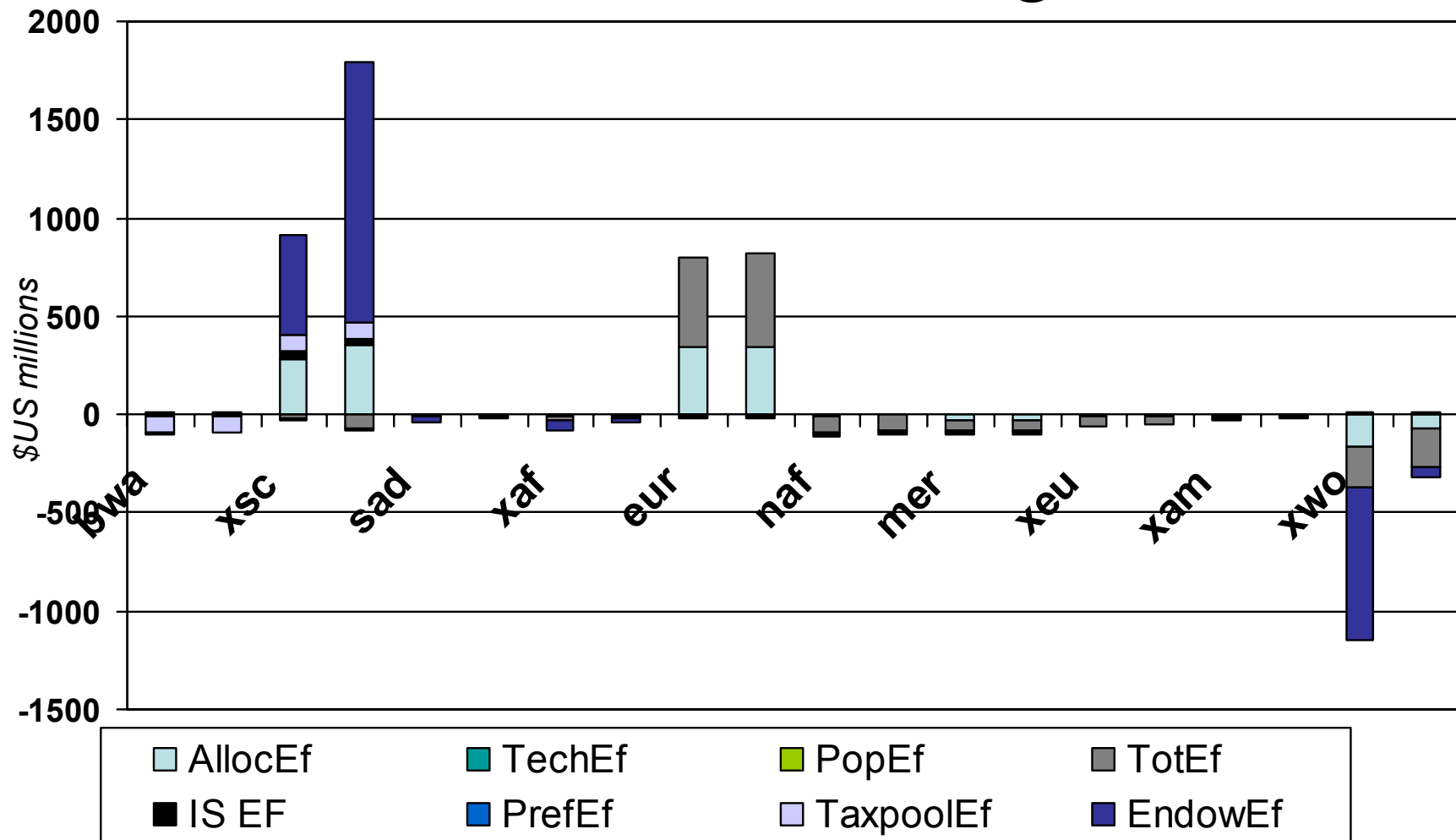


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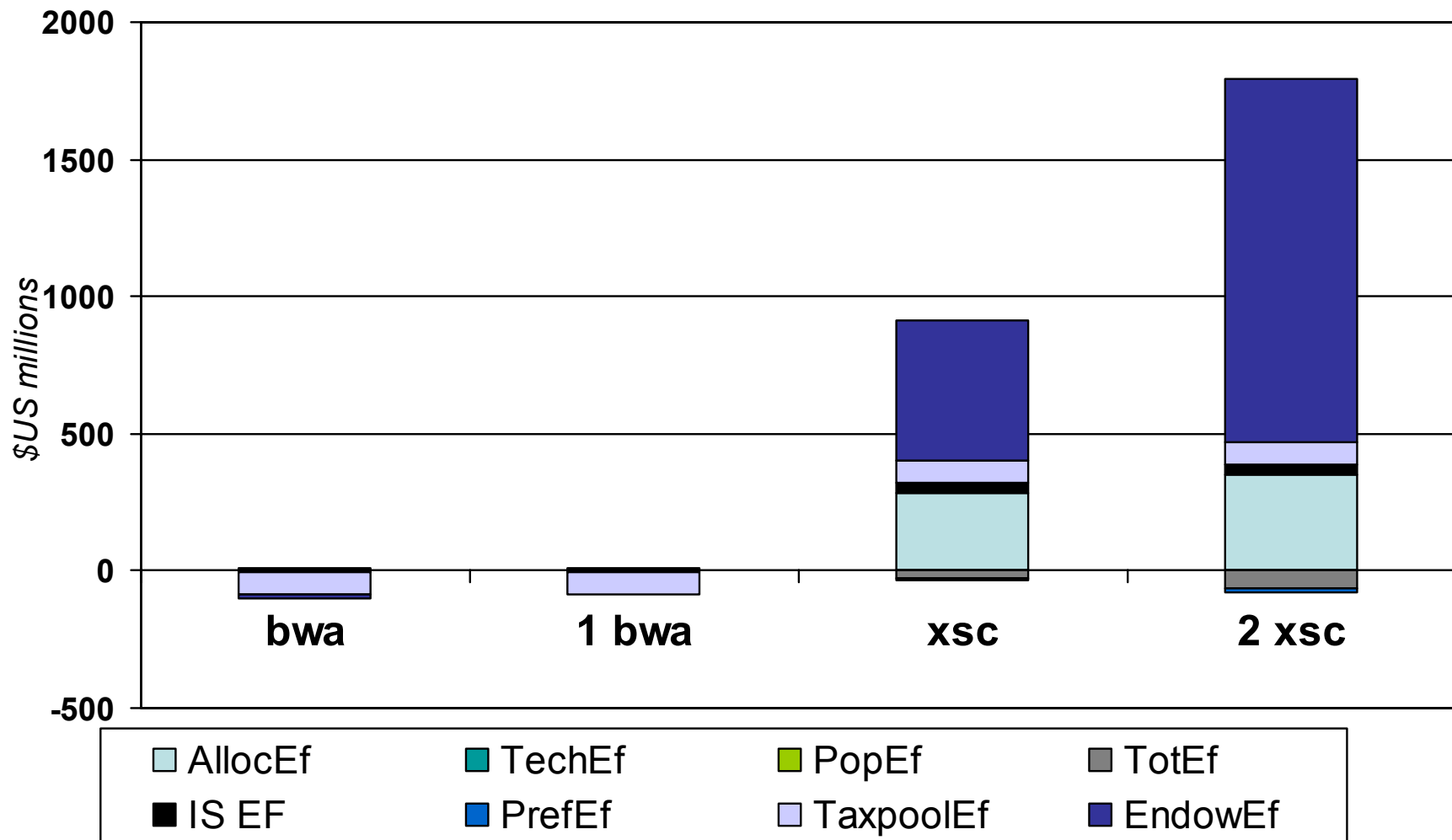
EU-SA FTA: Fixed nominal wage vs Full employment



EU-SA FTA: Fixed nominal wage vs fixed real wage



EU-SA FTA: Fixed nominal wage vs fixed real wage

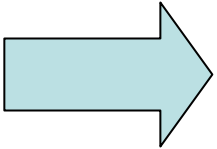


EU-SA FTA: Fixed nominal wage

	(Sim)	share of private consumption k			change in composit import pric		
			1 bwa	2 xsc		1 bwa	2 xsc
ppriv							
bwa	-1.19						
xsc	-0.94	1 crops	0.05	0.02	1 crops	2.27	-1.8
sad	-0.13	2 aag	0	0.02	2 aag	1.12	-1.64
xaf	-0.02	3 mine	0.02	0.04	3 mine	-0.27	-0.17
eur	0.02	4 food	0.3	0.19	4 food	-2.22	-21.63
naf	-0.01	5 tex	0.04	0.05	5 tex	-3.15	-4.43
mer	-0.07	6 hman	0.06	0.08	6 hman	-0.72	-3.35
xeu	0	7 lman	0.13	0.07	7 lman	-1.62	-3.95
xam	-0.02	8 utils	0.02	0.03	8 utils	0.18	0.02
xwo	-0.01	9 cns	0	0	9 cns	0	0.01
		10 serv	0.38	0.51	10 serv	0	0.01

Outline

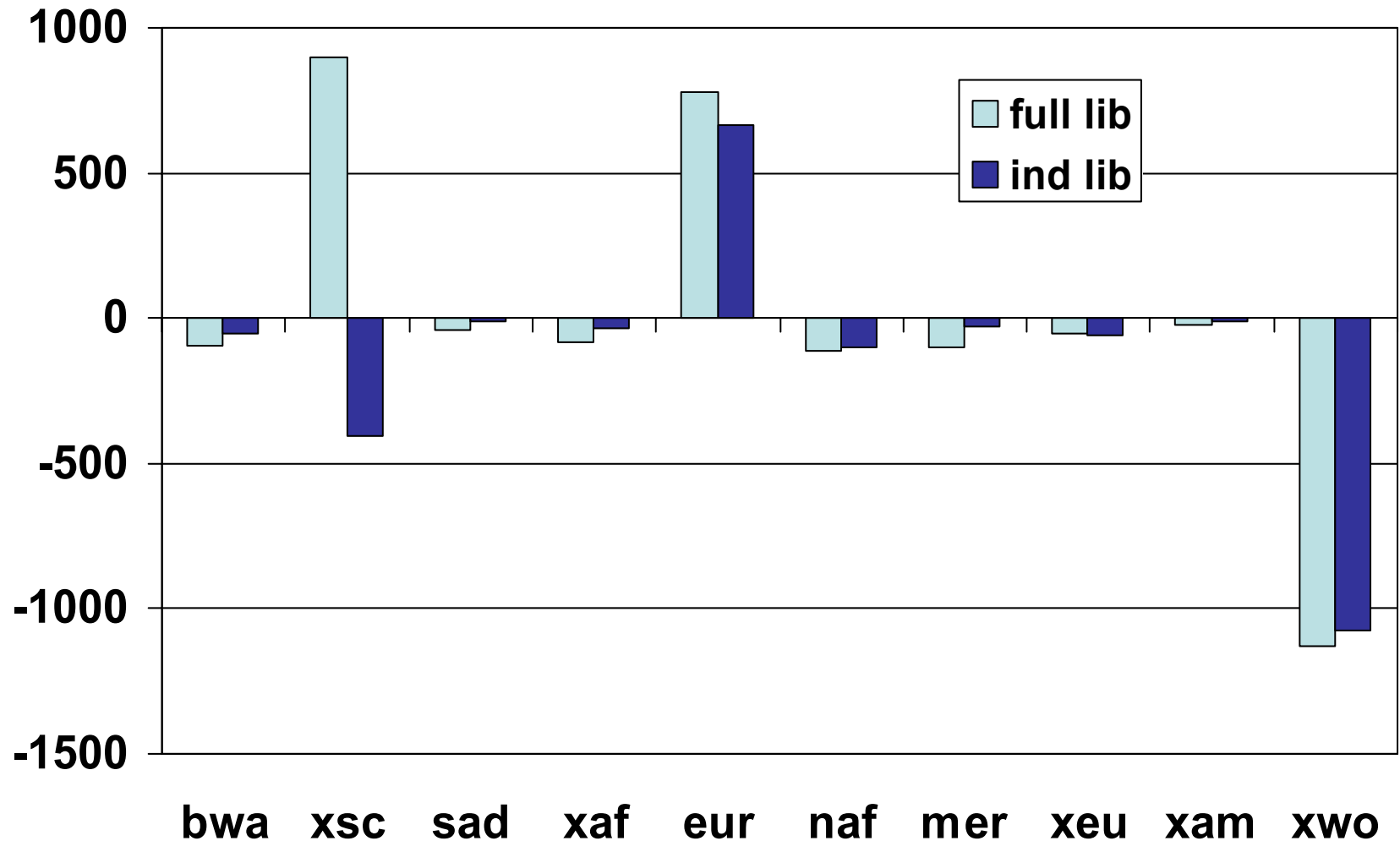
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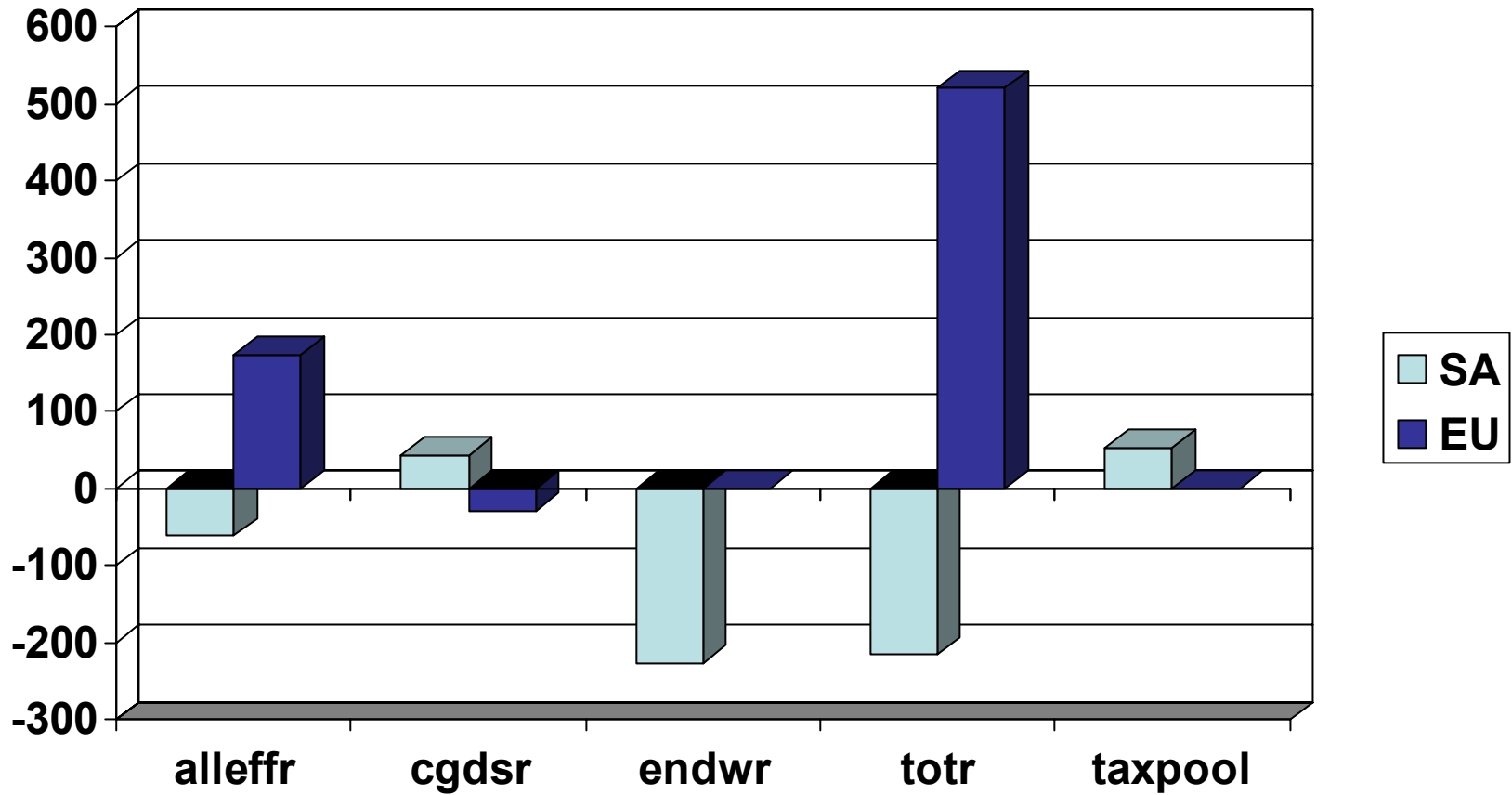
EU-SA FTA

- What is the experiment?
 - Liberalization of Industry btw. EU and South Africa
 - Comparison of welfare btw. full lib. and lib. of industry
- How? – Making subsets and subtotals
 - ind (tex, hman, lman)
 - nind (crops, aag, food, mine, utils, cns, ser)

Wel. effect from full & ind. Lib.



Welfare decomposition



Lib. of Industry btw. EU & SA

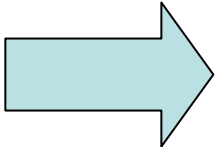
- Substantial welfare gain in EU
 - terms of trade effect: substantial component
 - reason: increase export price
- Welfare loss in SA
 - endowment effect
 - high unemployment

Lib. of Industry btw. EU & SA

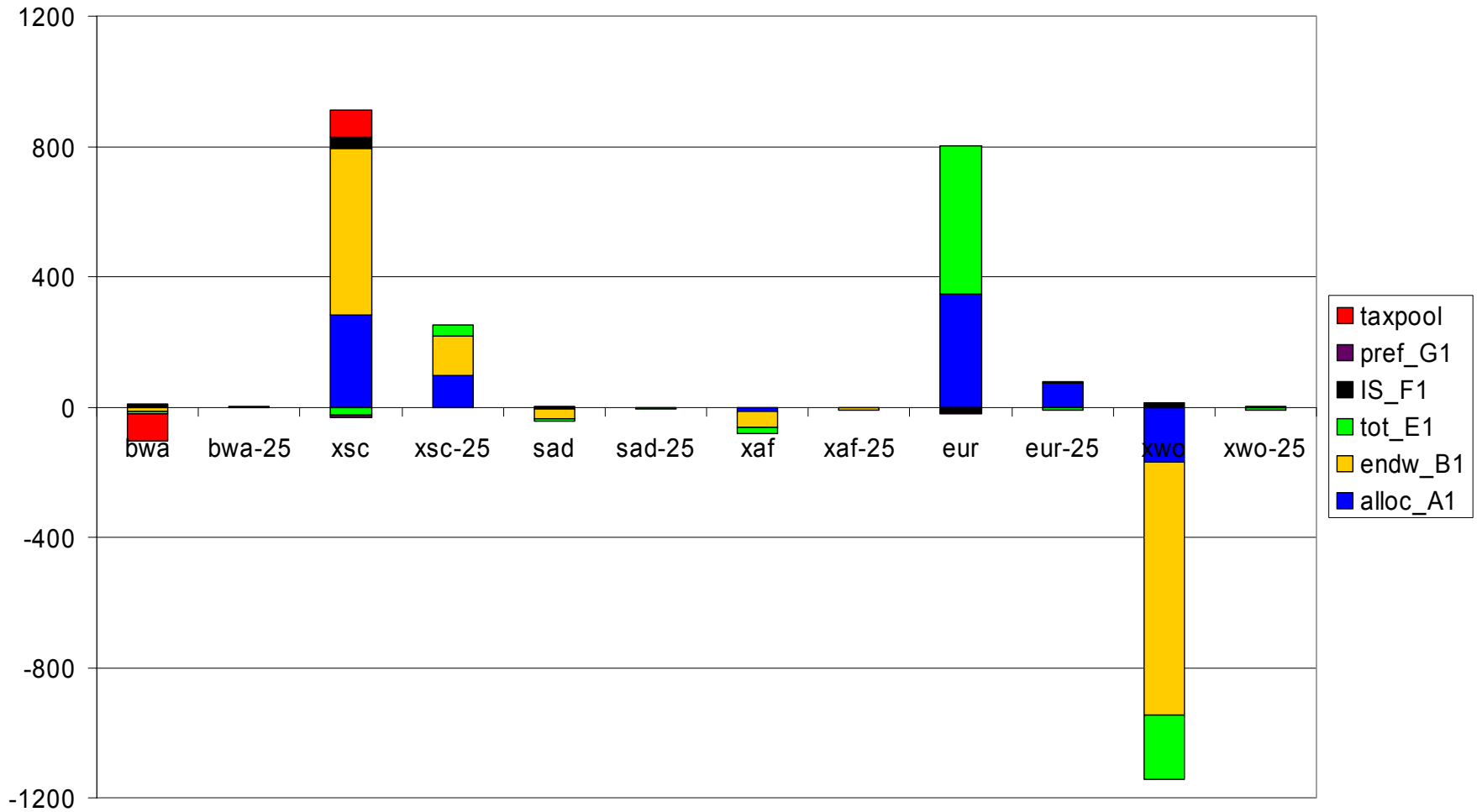
Edw. effect	full lib.	ind. lib.	Tot effect	full lib.	ind. lib.
SA	510.23	-226.35	SA	-23.15	-215.72
EU	0	0	EU	455.2	520.23

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Welfare impacts with Full Liberalization and 25% Ag



Changes in Export Volumes

	BWA		XSC		EUR	
Commodity	full	ag-25	full	ag-25	full	ag-25
crops	0.0	0.0	280.6	60.8	(109.0)	(19.2)
aag	0.7	0.1	17.6	4.4	(0.2)	1.0
food	(10.7)	(1.9)	2141.0	226.0	458.1	51.4
tex	2.7	0.0	176.8	(3.8)	312.7	4.6
hman	(2.3)	0.1	324.5	(65.9)	254.9	25.4
lman	(35.1)	0.6	431.8	(25.1)	1202.9	27.0

Subtotal 1- EU+XEU(Switzerland, rest of the EFTA, CEFTA)

-Subtotal 2 – full liberalization + 25% liberalization EU-XSC AG trade

-Subtotal 3 – full liberalization + 25% liberalization XEU-XSC AG trade

EV_ALT	TOTAL				
	EU-XSC 25%	EU enl + 25%	Subtotal 1	Subtotal 2	Subtotal 3
bwa	-3	-2.46	0.85	-2.97	-0.34
xsc	250	79.07	-200.11	246.56	32.63
sad	-6	-131.29	-125.01	-5.75	-0.53
xaf	-10	-801.73	-790.24	-10.28	-1.21
eur	69	4899.94	4834.86	70.52	-5.44
naf	-1	-1535.49	-1534.21	-1.37	0.1
mer	-12	-737.46	-724.65	-11.89	-0.91
xeu	0	6346.64	6312.61	-1.89	35.92
xam	-3	-226.89	-223.19	-3.35	-0.35
xwo	-5	-10617.48	-10615.7	-4.68	2.94
total	278	-2727.15	-3064.83	274.9	62.81

welfare	1 alloc_A1	2 endw_B1	5 tot_E1	6 IS_F1	8 taxpool	Total
1 bwa	0.77	-0.84	-0.94	0.34	-1.77	-2.45
2 xsc	77.38	3.68	-4.81	1.06	1.75	79.06
3 sad	-17.82	-79.66	-35.12	1.35	0.00	-131.29
4 xaf	-60.75	-602.49	-128.73	-9.55	0.00	-801.73
5 eur	1481.43	0.00	3458.75	-40.23	0.00	4899.94
6 naf	-103.30	0.00	-1324.82	-107.37	0.00	-1535.49
7 mer	-266.87	0.00	-359.88	-110.71	0.00	-737.46
8 xeu	6346.70	0.00	-8.07	8.01	0.00	6346.64
9 xam	-58.16	0.00	-129.48	-39.25	0.00	-226.89
10 xwo	-1693.56	-7744.20	-1474.97	296.18	0.00	-10617.48
Total	5705.82	-8423.50	-8.06	-0.19	-0.02	-2727.14

CNTendwr	(Sim)	Subtotal 1	Subtotal 2	Subtotal 3
bwa	-0.84	-0.14	-0.67	-0.02
xsc	3.68	-134.45	118.47	19.66
sad	-79.66	-77.09	-2.49	-0.09
xaf	-602.49	-594.33	-7.2	-0.96
xwo	-7744.2	-7746.66	0.04	2.43

CNTendwr	bwa	xsc	sad	xaf	xwo
UnSkLab	-0,84	3,68	-79,66	-602,49	-7744,2

ALLOCAT	CHANGE			
CNTalleffir	bwa	xsc	eur	xeu
crops	0,04	1,37	42,01	341,77
aag	0,01	0,11	83,58	287,58
food	0,66	75,29	1130,77	4865,15

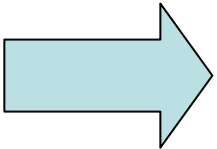
food		tms	txs
EU	BWA	-10,43	
	XSC	-10,43	-1,82
	XEU	-49,66	-5,6
XEU	BWA	-8,85	
	XSC	-8,85	-1,76
	EU	-25,04	-7,46
XSC	EU	-7,27	-0,53
	XEU	-15,65	-0,77

FOOD				
ps[food*]	(Sim)	Subtotal 1	Subtotal 2	Subtotal 3
xeu	-6,63	-6,61	0	-0,01

MSHRS(food, EU, XEU)= 0.66

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EU – SADC FTA

Summarized welfare report

	1 alloc_ A1	2 endw _B1	3 tech_ C1	4 pop_ D1	5 tot_E 1	6 IS_ F1	7 pref_ G1	8 taxpo ol	Total
bwa	-5	-7	0	0	37	7	0	-80	-47
xsc	222	181	0	0	-113	38	-7	80	402
sad	178	1934	0	0	667	9	-39	0	2749
eur	937	0	0	0	41	-13	0	0	964

Endowment
effect

	1 Land	2 UnSkLab	3 SkLab	4 Capital	5 NatRes	Total
bwa	0	-7	0	0	0	-7
xsc	0	181	0	0	0	181
sad	0	1934	0	0	0	1934
eur	0	0	0	0	0	0

- SAD: Demand for unskilled labor increases particularly in crops, food, services

Terms of Trade decomposition

SADC

	1 pworld	2 pexport	3 pimport	Total
1 crops	1	152	-12	141
2 aag	0	3	0	3
3 mine	1	84	0	85
4 food	1	198	-48	152
5 tex	0	70	1	71
6 hman	0	55	1	56
7 lman	0	22	4	27
8 utils	0	8	0	8
9 cns	0	1	0	1
10 serv	0	122	0	123
Total	4	717	-54	667

- Positive TOT effect (was negative in original experiment);
- Export contribution has increased (was negative on aggregate in original experiment)

EU

	1 pworld	2 pexport	3 pimport	Total
1 crops	-17	-58	-3	-78
2 aag	1	-7	2	-4
3 mine	-23	12	-19	-30
4 food	11	-100	-85	-174
5 tex	2	-2	-42	-42
6 hman	-5	155	-87	63
7 lman	-12	296	-111	173
8 utils	0	0	0	0
9 cns	0	4	1	5
10 serv	0	125	4	129
Total	-44	426	-341	41

- TOT effect reduced dramatically compared to original experiment (455.2);
- Rise in import contribution – food, textiles, lman;
- Fall in total export contribution of food (was positive in original experiment): from CNTtot(r), export contribution positive for BWA, XSC, SADC, but negative elsewhere;
- Sharp reduction in intra EU trade – substitution effect

Change in commodity exports (US\$m)

	BWA	XSC	SADC	EU
Crop agriculture	0	299.84	-428.09	-67.95
Animal agriculture	2.9	22.15	-7.99	9.15
Mining	0	-15.63	-376.39	83.96
Food	-9.23	2065.94	3818.6	-1124.17
Textiles	16.78	192.75	292.89	426.33
HM	-5.05	328.27	-236.13	1374.56
LM	-57.91	101.94	-86.38	3311.81
Utilities	0.04	4.2	-43.74	3.84
Construction	0.13	0.3	-5.02	-14.47
Services	2.81	28.06	-424.43	-45.5

Change in commodity imports (US\$m)

	BWA	XSC	SADC	EU
Crop agriculture	-3.16	53.35	143.22	-54.17
Animal agriculture	-0.45	12.83	21.89	-29.8
Mining	0.24	-8.3	59.34	71.14
Food	-0.02	1414.69	497.01	3122.78
Textiles	10.51	171.01	246.79	305.72
HM	-18.42	477.31	870.69	545.13
LM	5.77	1211.74	1181.49	957.38
Utilities	-0.01	-0.15	37.05	1.79
Construction	-0.03	1.13	6.08	10.56
Services	-0.67	-31.73	394.4	223.88

Closure change

Real wage of unskilled labor fixed in BWA, XSC, SAD, XAF, XWO

welfare	1 alloc_A 1	2 endw_B 1	3 tech_C 1	4 pop_D 1	5 tot_E1	6 IS_F1	7 pref_G 1	8 taxpool	Total
bwa	-5	0	0	0	38	8	0	-79	-39
xsc	302	1151	0	0	-173	44	-9	79	1395
sad	108	1045	0	0	724	6	-37	0	1847
eur	924	0	0	0	37	-15	0	0	946

$$\mathbf{pfactreal}(i,s) = \mathbf{pm}(i,s) - \mathbf{ppriv}(s)$$

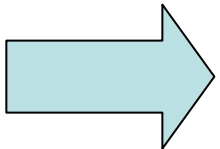
$$\mathbf{Ppriv}(xsc) = -1.2; \mathbf{ppriv}(sad) = 5.3$$

$$\mathbf{ppriv}(r) = \mathbf{sum}\{i, \mathbf{TRAD_COMM}, \mathbf{CONSHR}(i,r) * \mathbf{pp}(i,r)\}$$

$$\mathbf{pp}(i,s) = \mathbf{PMSHR}(i,s) * \mathbf{ppm}(i,s) + [1 - \mathbf{PMSHR}(i,s)] * \mathbf{ppd}(i,s)$$

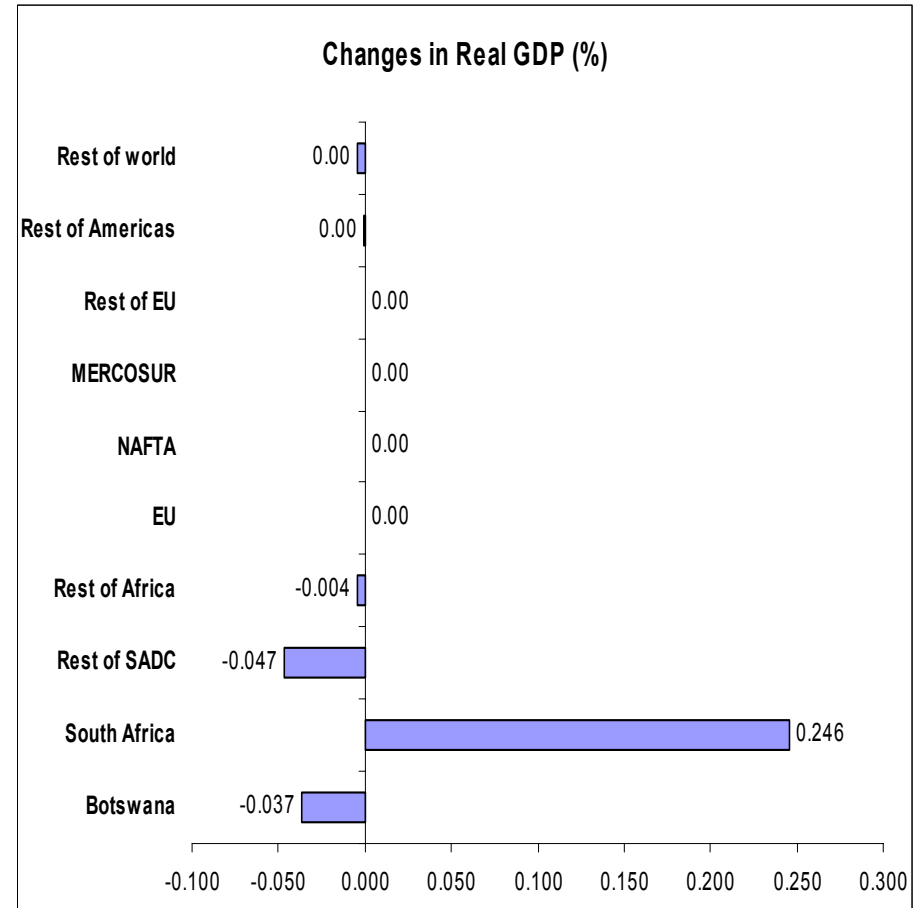
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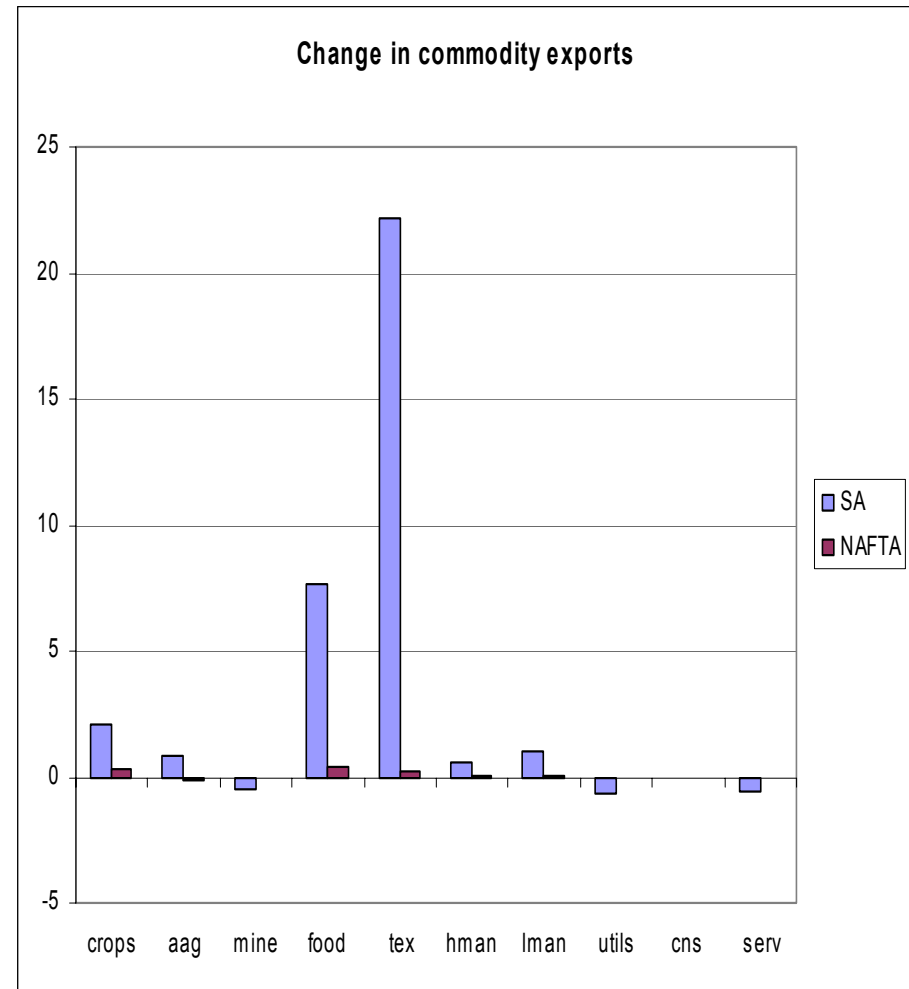
Potential impact of SA NAFTA FTA

- Impact on GDP limited
- Welfare gains also limited
- SA: \$376m, NAFTA: \$148m
- Decomposition: SA benefits largely in textile
NAFTA crops
- Endowment effect 5% increase in unskilled jobs
NAFTA: capital
- Positive price effect in textiles negative in crops



Impact on trade

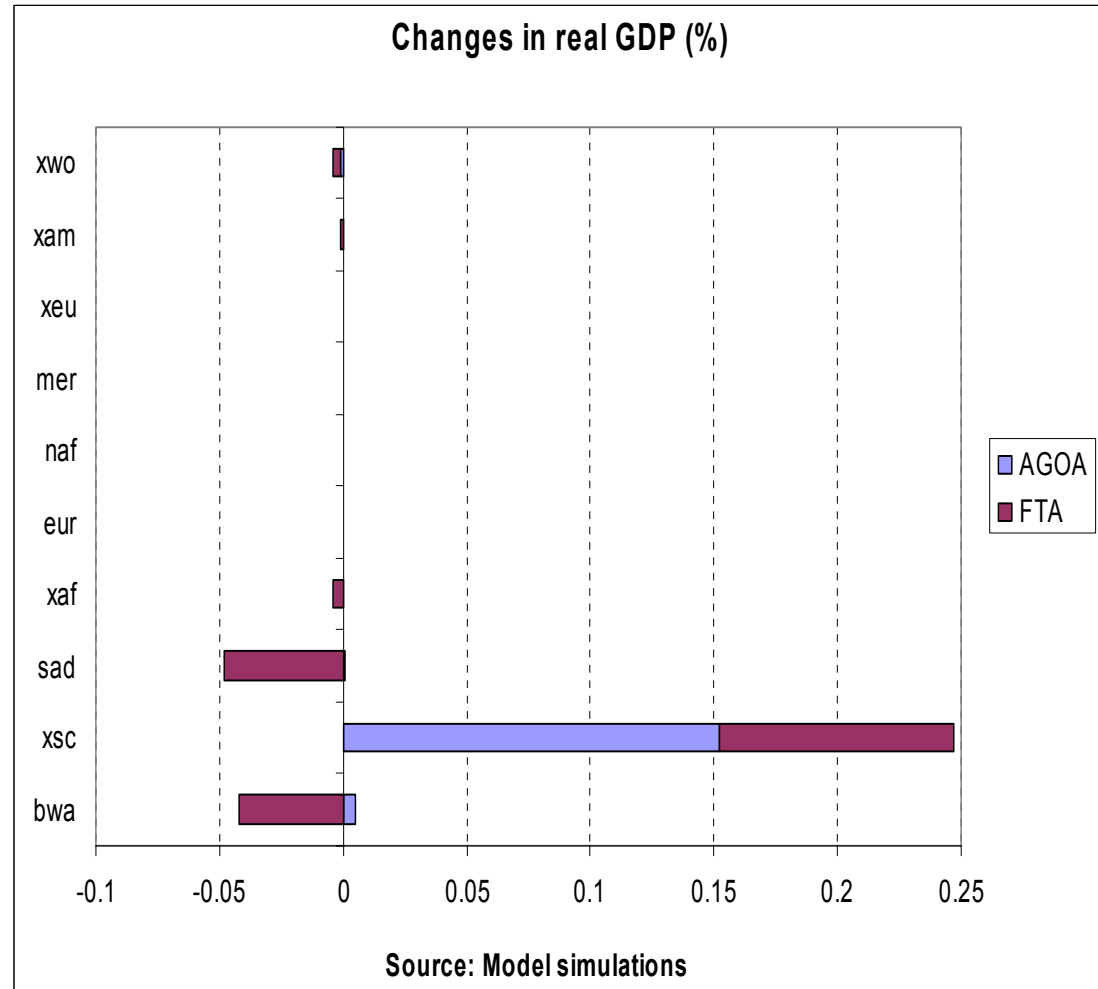
- Minor changes for NAFTA except crops & food
- SA: impact in textiles crops and food
- Crop imports by SA lead to shift of endowments (land & capital)
- Imports into SA jump in crops & food & textiles
- NAFTA: mainly textiles



IMPACT OF AGOA AND SA-NAFTA

3 main conclusions:

1) SA and NAFTA have very little to gain from a FTA



II) A NAFTA-SA FTA would reduce world welfare

EV (Mill. US\$)	EU-SA FTA	AGOA+ FTA	AGO		1 alloc_A1	AGOA+FTA	AGOA	FTA
			A	FTA	SA	nafta	SA	nafta
bwa	-92.5	-14.6	-0.7	-13.9	SA	89.7	25.6	64.1
SA	895.6	376.6	248.4	128.1	nafta	11.6	-8.8	20.4
sad	-41.8	-23.4	-1.0	-22.3	NAFTA+SA	101.3	16.8	84.5
xaf	-81.4	-15.2	0.2	-15.4	All other Regions	-105.7	-16.0	-89.8
eur	780	-113.9	7.1	121.0	Total	-4.5	0.8	-5.2
NAFTA	-109.6	148.2	-32.2	180.3	2 endw_B1	AGOA+FTA	AGOA	FTA
mer	-98.9	-15.6	-0.9	-14.7	SA	251.5	184.6	66.9
xeu	-55.3	2.2	-0.2	2.3	nafta	0	0	0
xam	-25.4	-10.4	-4.0	-6.4	NAFTA+SA	251.5	184.6	66.9
xwo	-1129.6	-408.8	-75.9	332.9	All other Regions	-322.3	-44.6	-277.7
NAFTA+SA		524.7	216.3	308.5	Total	-70.8	140.0	-210.8
All other Regions		-599.7	-75.4	524.4	5 tot_E1	AGOA+FTA	AGOA	FTA
Total	41.2	-75.0	140.9	215.9	SA	17.2	39.9	-22.7
					nafta	126.2	-21.9	148.1
					NAFTA+SA	143.4	324.7	-144.0
					All other Regions	-143.4	-18.0	-125.4
					Total	0.0	0.0	0.0

III) Structural adjustment is limited to SA

Changes in sectoral VA (%)						
	NAFTA			SA		
NAFTA	AGOA+FTA	AGOA	FTA	AGOA+FTA	AGOA	FTA
crops	0.1	0	0	-1.4	-0.2	-1.1
aag	0	0	0	0.6	-0.1	0.7
mine	0	0	0	-0.3	-0.2	-0.1
food	0	0	0	0.9	-0.2	1.1
tex	-0.01	-0.05	0.04	5.2	5.7	-0.4
hman	0	0	0	0.0	-0.2	0.2
lman	0	0	0	-0.4	-0.3	-0.1
utils	0	0	0	-0.2	-0.2	-0.1
cns	0	0	0	0.8	0.2	0.6
serv	0	0	0	-0.2	-0.1	-0.2
CGDS	0	0	0	1.1	0.3	0.8

DEMAND FOR ENDOWMENTS

SA	crops	aag	food	tex
Land	-3.49	3.46	0	0
UnSkLab	-14.39	6.56	25.09	78.88
SkLab	-0.2	0.08	4.1	12.69
Capital	-25.48	6.84	25.96	30.55
NatRes	-0.01	0	0	0