

GTAP Training Project

Removal of Output Protection on North America Grains and Impacts on World Food Production

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MOTIVATION

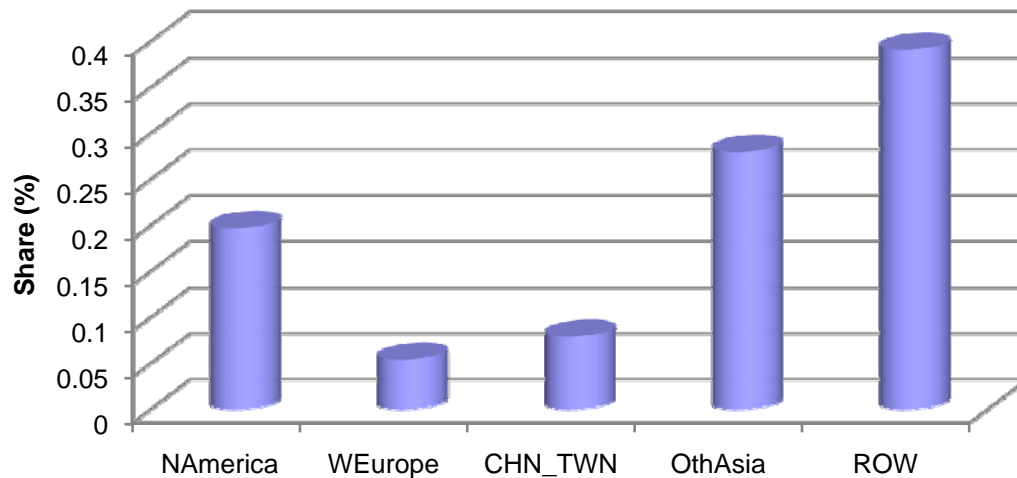
- North America has protection on Grains

rTO	1 NAmerica	2 WEurope	3 CHN_TW	4 OthAsia	5 ROW
grains	8	0.3	-1.9	0.9	1.6
food	0.5	-1	-4.9	-8	-0.8
extract	-0.5	0.9	-4.5	-3.3	-3.6
tex	-0.8	-1	-4.7	-2.7	-1
mnfc	-0.3	0.2	-4.3	-3.4	-2.3
serv	-0.5	-1.8	-4.7	-4.4	-2.5

MOTIVATION (Cont'd)

North America Grains export to ROW and Other Asia is large.

Composition of Grain Exports from NAmerica to the World



- Grains output is an important input in Food Production.
- Any changes to output protection of Grains in North America is likely to have impacts on Food Production in ROW and Other Asia regions.

MOTIVATION (Cont'd)

Our Project aims to quantify:

Impacts of changes to output protection of Grains production in North America on World Food Production

Our technical purpose in this project:

Simple Shock in order to understand GDyn mechanism

Baseline

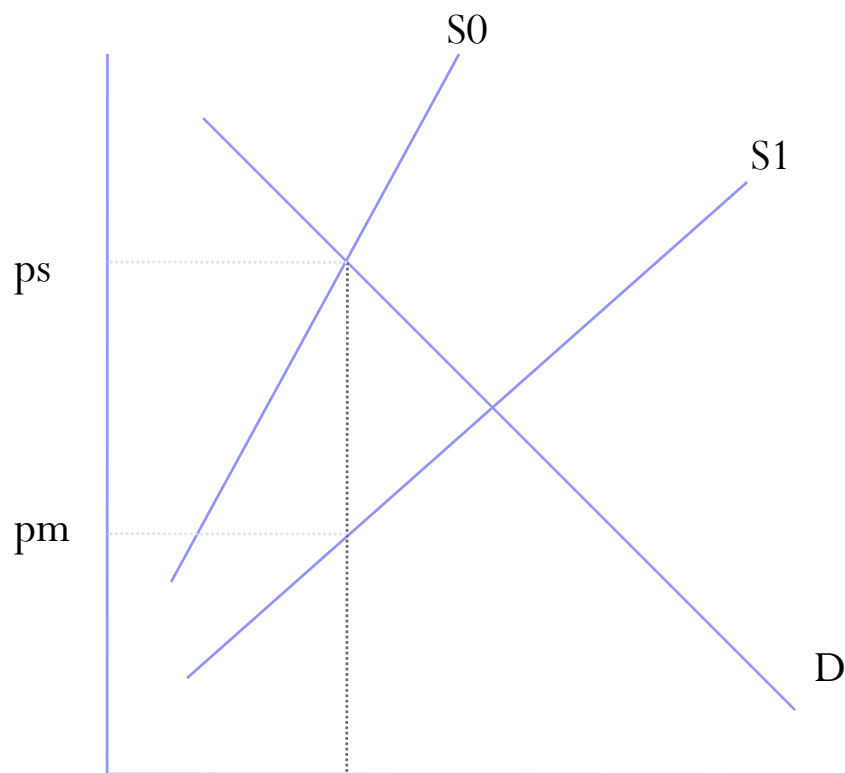
- Use the same GDP projection used with 3MINI
- Change GDP Growth Projection for China

2001-05	2005-10	2010-15	2020
7 %	12%	10%	7%

Policy Shocks

Remove the Output Subsidy to Grains production in North America
Over the period 2001-05

Background



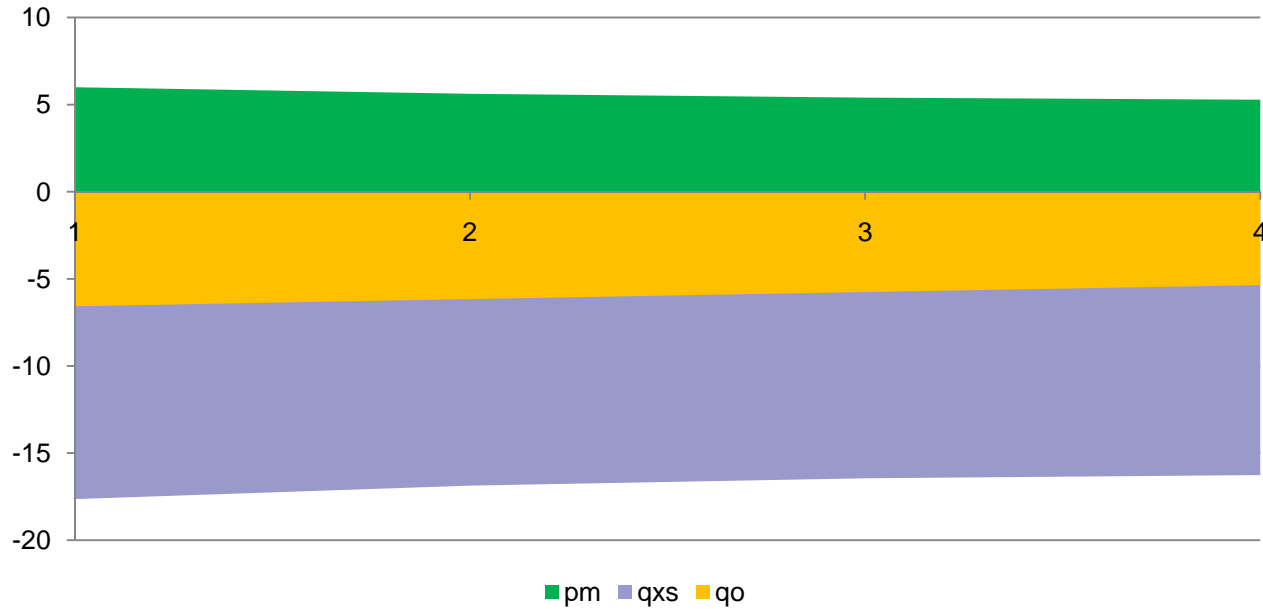
$$(all,i,PROD_COMM)(all,r,REG) \\ ps(i,r) = to(i,r) + pm(i,r);$$

$$(all,i,PROD_COMM)(all,r,REG) \\ pm(i,r) = ps(i,r) - to(i,r) ;$$

Note: our policy shock
 $to("Grains", "Namerica") = -$
7.37096071

Results

Deviation results on Grains in North America



Results for Grains in North America over time (percentage point change)

	bs1b-br1r-2005	bs1b-br1r-2010	bs1b-br1r-2015	bs1b-br1r-2020
pm	6.0013	5.6297	5.4053	5.2823
qxs	-17.64	-16.87	-16.44	-16.26
qo	-6.57	-6.16	-5.75	-5.36

Results

qfe[*grains*]	2001-05	2005-10	2010-15	2015-20
Land	-4.8	-4.5	-4.5	-4.5
UnSkLab	-7.3	-7.0	-7.0	-7.0
SkLab	-7.3	-7.0	-7.0	-7.0
Capital	-7.3	-7.0	-7.0	-7.0
NatRes	0.0	0.0	0.0	0.0

pfe[*grains*]	2001-05	2005-10	2010-15	2015-20
Land	-10.48	-10.61	-10.47	-10.20
UnSkLab	-0.03	-0.03	-0.02	-0.02
SkLab	-0.02	-0.01	-0.01	-0.01
Capital	-0.03	-0.02	-0.01	-0.01
NatRes	-27.15	-26.18	-25.07	-23.92

Results

North America (percentage Point change)

pm	2001-05	2005-10	2010-15	2015-20
Land	-5.96	-6.43	-6.58	-6.57
UnSkLab	-0.03	-0.03	-0.02	-0.02
SkLab	-0.02	-0.01	-0.01	-0.01
Capital	-0.03	-0.02	-0.01	-0.01
NatRes	0.03	-0.02	-0.02	0.00
grains	6.00	5.63	5.41	5.28
food	0.01	-0.01	-0.01	-0.01
extract	-0.01	-0.02	-0.02	0.00
tex	-0.02	-0.01	-0.01	-0.01
mnfc	-0.02	-0.02	-0.01	-0.01
serv	-0.02	-0.02	-0.01	-0.01

Results

Import of Grains from Other Regions to North America

qxs[grains**]	2001-05	2005-10	2010-15	2015-20
NAmerica	-1.6	-1.6	-1.6	-1.8
WEurope	36.0	33.6	32.1	31.3
CHN_TWN	36.6	34.3	32.8	31.9
OthAsia	31.9	30.2	29.5	29.4
ROW	35.7	33.0	31.3	30.4

Import of Grains from Other Regions to ROW

qxs[grains**]	2001-05	2005-10	2010-15	2015-20
NAmerica	-22.9	-21.7	-21.2	-21.0
WEurope	5.6	5.3	5.0	4.7
CHN_TWN	6.1	5.9	5.5	5.2
OthAsia	2.6	2.9	3.1	3.3
ROW	5.3	4.8	4.4	4.0

Results

Import of Food from Other Regions to **North America**

qxs[food**]	2001-05	2005-10	2010-15	2015-20
NAmerica	0.15	0.16	0.14	0.12
WEurope	-0.07	-0.11	-0.11	-0.10
CHN_TWN	-0.14	-0.15	-0.15	-0.11
OthAsia	-0.77	-0.68	-0.56	-0.41
ROW	-0.34	-0.38	-0.38	-0.34

Import of Food from Other Regions to **ROW**

qxs[food**]	2001-05	2005-10	2010-15	2015-20
NAmerica	0.43	0.47	0.45	0.39
WEurope	0.21	0.21	0.20	0.18
CHN_TWN	0.15	0.17	0.17	0.17
OthAsia	-0.45	-0.34	-0.23	-0.12
ROW	-0.06	-0.07	-0.08	-0.07

Results

Output changes of Grains by regions over time

qo[grains*]	2001-05	2005-10	2010-15	2015-20
NAmerica	-6.6	-6.2	-5.7	-5.4
WEurope	1.8	1.7	1.6	1.6
CHN_TWN	0.8	0.6	0.5	0.4
OthAsia	1.6	1.4	1.2	1.0
ROW	1.1	1.0	0.9	0.8

Output changes of Food by regions over time

qo[Food*]	2001-05	2005-10	2010-15	2015-20
NAmerica	0.03	0.04	0.05	0.04
WEurope	0.02	0.02	0.02	0.01
CHN_TWN	-0.01	0.00	0.00	0.00
OthAsia	-0.14	-0.12	-0.09	-0.06
ROW	-0.03	-0.03	-0.04	-0.03

Results

Income	2001-05	2005-10	2010-15	2015-20
NAmerica	-0.008	-0.005	-0.002	-0.001
WEurope	0.011	0.008	0.005	0.004
CHN_TWN	0.019	0.016	0.014	0.010
OthAsia	0.007	0.006	0.006	0.006
ROW	0.044	0.038	0.032	0.028

HH Final Consumption,
Saving and
Government Final Consumption } CD technology

Thus values of HH, SAV, GOV move in line with income → decrease in North America.

As a results, aggregate of imports also declines in North America, and declines more than the reduction in Export from North America → Trade Balance improves slightly.

Overall, nominal GDP in North America declines.

Results

Nominal GDP

vgdp	2001-05	2005-10	2010-15	2015-20
NAmerica	-0.01	-0.01	-0.01	-0.01
WEurope	0.01	0.01	0.01	0.01
CHN_TWN	0.02	0.01	0.02	0.01
OthAsia	0.01	0.01	0.01	0.01
ROW	0.04	0.04	0.03	0.03

Real GDP

qgdp	2001-05	2005-10	2010-15	2015-20
NAmerica	0.0045	0.0038	0.003	0.0024
WEurope	-0.0017	0.0005	0.0014	0.0014
CHN_TWN	-0.0031	-0.003	-0.001	0.0014
OthAsia	-0.0097	-0.0087	-0.0075	-0.0058
ROW	-0.004	-0.0012	0.0016	0.0038

Results

GDP price index

pgdp	2001-05	2005-10	2010-15	2015-20
NAmerica	-0.0155	-0.0128	-0.0101	-0.0089
WEurope	0.0151	0.0104	0.0068	0.0049
CHN_TWN	0.0204	0.0179	0.016	0.0111
OthAsia	0.0167	0.0147	0.0134	0.0117
ROW	0.0469	0.0399	0.0332	0.027

Consumer Price Index

ppriv	2001-05	2005-10	2010-15	2015-20
NAmerica	-0.0155	-0.0131	-0.0105	-0.009
WEurope	0.0174	0.0127	0.0093	0.0074
CHN_TWN	0.0364	0.0298	0.0255	0.0203
OthAsia	0.0318	0.0271	0.0235	0.0197
ROW	0.0591	0.0529	0.0469	0.0402

Results

Impacts of the removal of Grains protection in North America on ROW and Other Asian countries

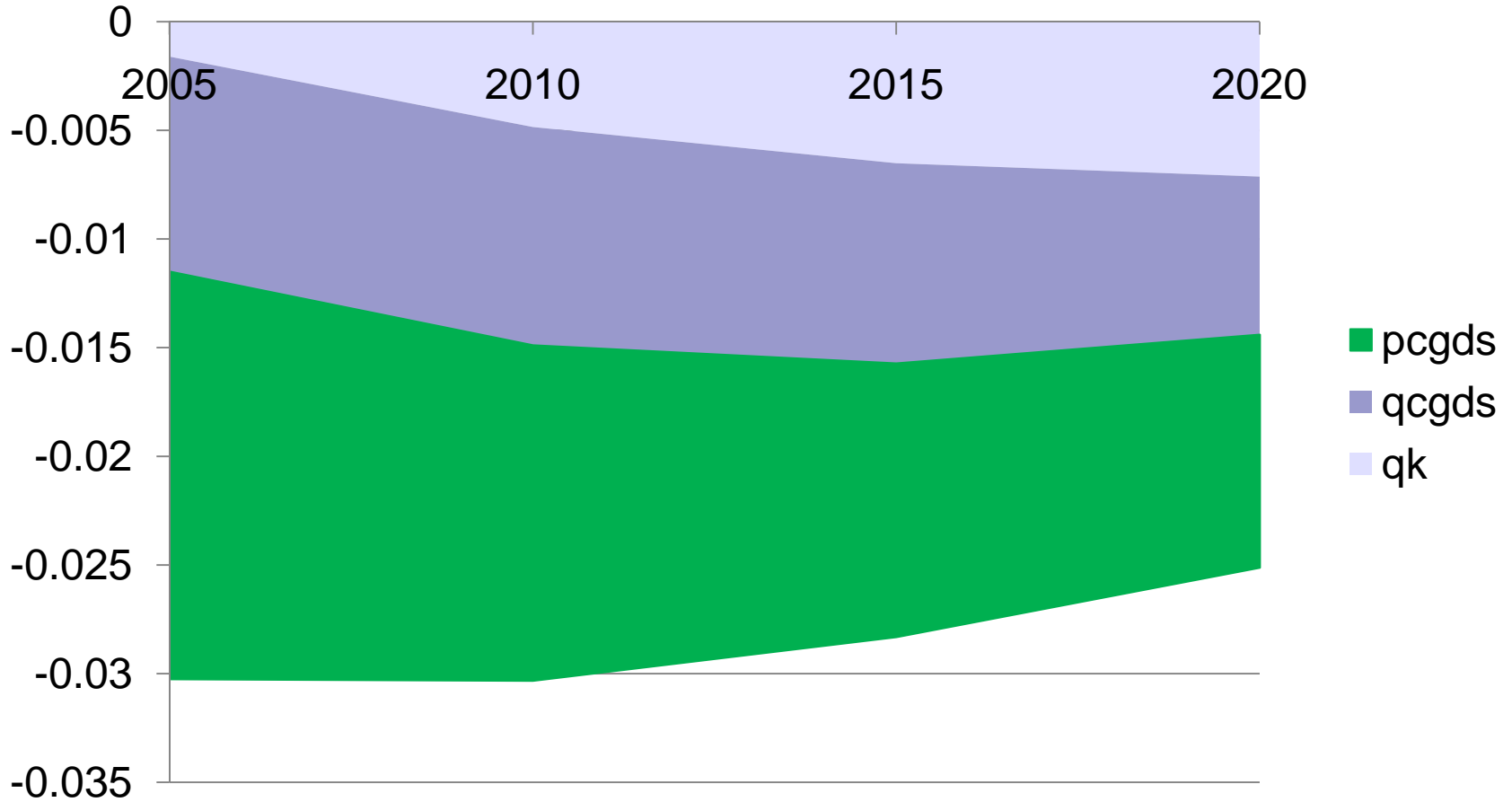
qo[Food*]	2001-05	2005-10	2010-15	2015-20
NAmerica	0.03	0.04	0.05	0.04
WEurope	0.02	0.02	0.02	0.01
CHN_TWN	-0.01	0.00	0.00	0.00
OthAsia	-0.14	-0.12	-0.09	-0.06
ROW	-0.03	-0.03	-0.04	-0.03

Efficiency gain in North America is at the expense of ROW and Other Asian country regions

- Lower level of Food supply from domestic source
- Higher prices

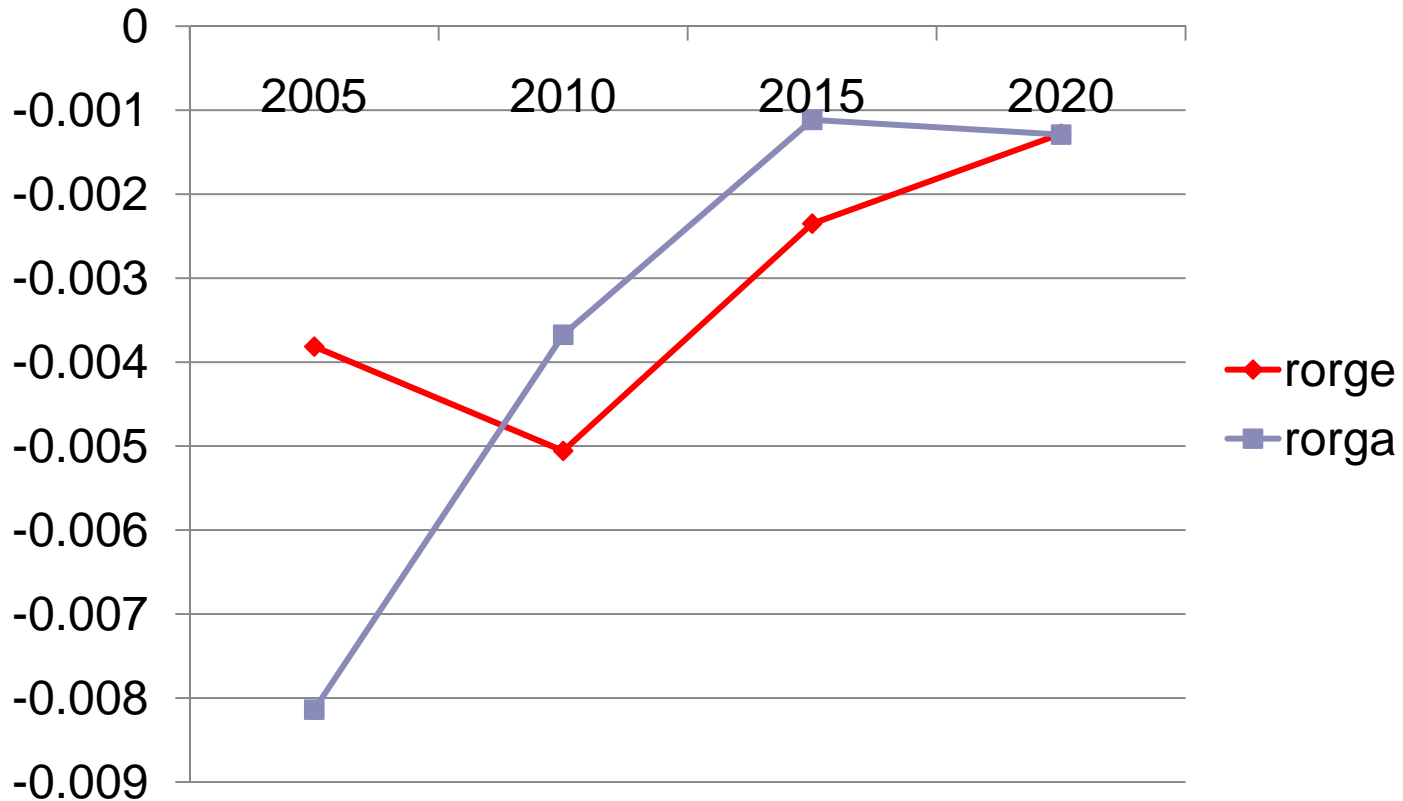
Results – Investment

Evolution of pcgds, qcgds, and qk relative to baseline



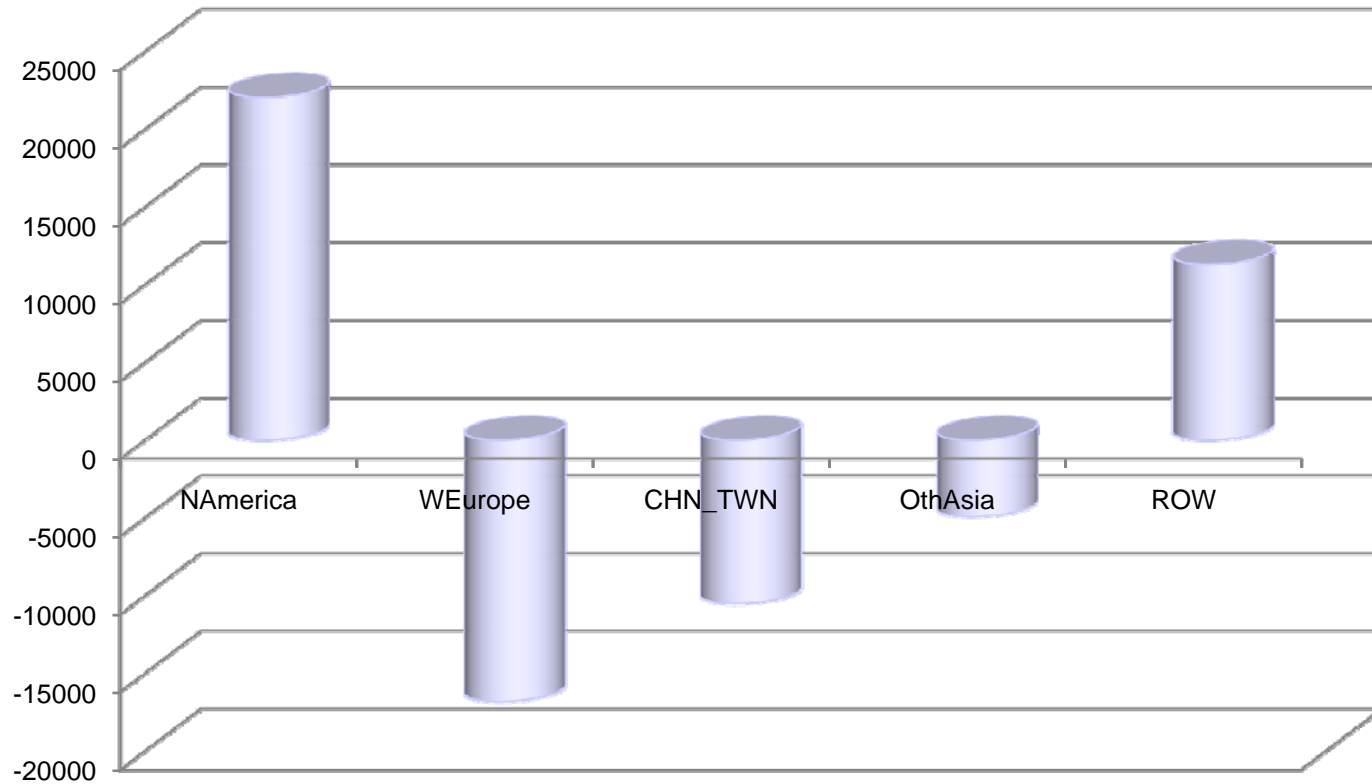
Results – Investment (Cont'd)

Rates of return for NAmerica



Results - Welfare

Welfare Changes



Conclusion

Impacts of the removal of Grains protection in North America on ROW and Other Asian countries:

Efficiency gain in North America is at the expense of ROW and OthAsia regions

- Lower level of Food supply from domestic source
- Higher prices

but

Welfare improves in the ROW, particular in FOOD sector.
How can we communicate with policy makers?

Over to you

Many thanks to GTAP staff for the training

Nice to meet you all here

Have a safe trip home.

Look forward to meeting you again.



Conclusions

CVXWD	1 NAmerica	2 WEurope	3 CHN_TWN	4 OthAsia	5 ROW	Total	
1 NAmerica	0.197	0.054	0.079		0.28	0.391	1
2 WEurope	0.013	0.682	0.007		0.006	0.291	1
3 CHN_TWN	0.006	0.019	0.003		0.923	0.049	1
4 OthAsia	0.005	0.026	0.01		0.886	0.074	1
5 ROW	0.023	0.127	0.026		0.191	0.632	1

CVXWD	1 NAmerica	2 WEurope	3 CHN_TWN	4 OthAsia	5 ROW	Total	
1 NAmerica	0.417	0.121	0.068	0.247		0.147	1
2 WEurope	0.069	0.73	0.011	0.05		0.141	1
3 CHN_TWN	0.123	0.133	0.013	0.601		0.13	1
4 OthAsia	0.169	0.138	0.1	0.402		0.191	1
5 ROW	0.141	0.327	0.05	0.144		0.338	1