Impact of Trade Reforms

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Outline

I. Introduction
II. Experiment 1: Sensitivity Analysis
III. Experiment 2: Closure Rules
IV. Experiment 3: DDR after TTIP
V. Discussion

Base Model

- Database
  - GTAP 2001 database
- Modifications (using ALTERTAX)
  - MFA quotas, EU expansion, Egypt-US Qualified Industrial Scheme (QIZ)
- Scenarios: Ag S4 and NAMA S9 Preferences
  - S4: Agricultural cuts based on a four-tier formula
  - S9: Non-agricultural (NAMA) cuts based on the Swiss formula
- Closures
  - Trade balance fixed for developing countries except China and India
  - Unemployment in the unskilled labor market for developing countries

4 Experiments

- **Experiment 1:** What's the impact of removing tarrif on food and beverages?
- **Experiment 2**:How sensitive are results to changes in the production function elasticity of substitution?
- **Experiment 2**: How do results differ under differing labor market closures?
  - What happens to wage shares under various closure assumptions?
- **Experiment 3**: What is the impact of the DDR in a post-TTIP global environment?
  - Who gains, who losses?
  - Does the sequencing of reform matter?

Exp 1: Impact of sensitive industry: Food and Beverages

Background

"Egypt is not a major exporter of agricultural products, nor do its import tariffs protect sensitive products, with the noted exception of tariffs on beverages and tobacco products, which have prohibitively high tariffs of 1000 – 3000 percent applied".

Objective

- Determine the impact if tariffs are removed.

GTAP Data from Doha Project: processed food and beverage industry	Before	After
Tax rate (e.g. CENTAM to Egypt)	588%	0%
Employment: Unskilled	1.80%	1.70%
Employment: Skilled	1.10%	1%
Employment: Unskilled (million USD $)	483	448
Employment: Skilled (million USD $)	94	87
Government tariff revenue (million USD $)	294	0
Share of dom. production in total consumption	93.6%	91.50%
Quantities		
Increase in imports	139%	
Decrease in output	7.20%	
Welfare gain (million USD $)	514	
Decrease in employment	6-8%	

Exp 2: Sensitivity Analysis

What It Is and What It Is Not

- Sensitivity analysis addresses such questions as:
- *How reliable are the results from a general equilibrium simulation? Is a policy conclusion very sensitive to the particular values assumed for parameters? Does our economic forecast depend critically on particular shocks to exogenous variables?*
  - **(Source: Help of GEMPACK)**

Sensitivity Analysis

- The Sensitivity Analysis was applied w.r.t Parameters – ESUBVA.
  - ESUBVA = CES between primary factors in production.
- The Sensitivity Analysis was applied in the first experiment (“Ag S4 and NAMA S9 Preferences”).

Sensitivity Analysis (w.r.t Parameter)

Factor to multiply/divide by 2

Sensitivity Analysis w.r.to Parameters (ESUBVA)

EV	Experiment 1	Mean	Sd	Sample	
				Lower	Upper
1 CENTAM	1092.597	1120.086	195.691	728.704	1511.468
2 China	10837.53	11053.77	1632.359	7789.052	14318.49
3 Egypt	11.032	13.38	22.932	-32.484	59.244
4 EU	3245.543	3275.34	254.471	2766.398	3784.282
5 India	1922.251	1952.002	221.474	1509.054	2394.95
6 Japan	9731.932	9741.104	201.236	9338.632	10143.58
7 LDC	-580.164	-582.065	27.08	-636.225	-527.905
8 MERCOSUR	2268.669	2344.243	423.169	1497.905	3190.581
9 MEXICO	-936.709	-935.718	18.145	-972.008	-899.428
10 ROW	27416.842	27973.477	4372.46	19228.56	36718.4
11 USA	-1216.895	-1185.452	147.126	-1479.7	-891.2
12 XME	-50.761	-54.397	49.063	-152.523	43.729

Sensitivity Analysis

- ***Confidence Intervals using Chebyshevs Inequality:***
- Using Chebyshev's inequality, you can be 75% confident that the value of real EV (EU) lies between 2766.398 (=3275.34-2*254.471) and 3784.282 (=3275.34+2*254.471) .

% confidence	Number of SDs from
75	2
88.89	3
93.75	4
95	4.47

Exp 3: Changing the Closure

What did we do:

- run the base scenario under : i) full employment closure; and ii) unemployment closure, for all countries

Why is this important:

- The mobility/rigidity of labor can shape the costs and benefits of trade reform.

How will this change the result (transmission):

- Tariff reductions affect the production of goods and services and the labor market demand:
  - Under full employment (flexible wages), wages will adjust to clear the labor market
  - With unemployment (fixed wages), employment will change depending on the demand for labor by firms
- **Aside:** How will the impact differ between skilled vs. unskilled labor

Macro results (*prelim not for quotation*)

Table 1. Results for LDCs: Macro Picture		
	Scenario	
	Sticky Real Wage	**Flexible Real Wage**
Output Growth (qgdp)	-0.15	-0.06
Welfare (EV)	-557	-425
Agri output (qo)	0.09%	0.14%
Value ($ mn)	113	180
Non-Agri output (qo)	-0.41%	-0.28%
Value ($ mn)	**-1287**	**-868**
Agri Employment (qfe)	0.11%	0.15%
Headcount (mn)	90	123
Non-agri Employment (qfe)	-0.34%	0
Headcount (mn)	-275	-123
Net employment	**-185**	0

Welfare decomposition

Table 2. Results for LDCs: Welfare Decomposition		
	WELFARE	
A	**Sticky Real Wage**	**Flexible Real Wage**
1 alloc_A1	**-188.31**	-147.8
2 endw_B1	**-159.65**	0
3 tech_C1	0	0
4 pop_D1	0	0
5 tot_E1	-170.36	-233.01
6 IS_F1	-38.35	-43.55
7 pref_G1	-0.37	-0.2
Total	-557.04	-424.57

?

Skilled vs. Unskilled

Table 3. Results for LDCs: Employment		
	WELFARE	
	Sticky Real Wage	**Flexible Real Wage**
Change in employment		
Unskilled agri (%)	0.11%	0.15%
Headcount (mn)	90	123
Unskilled non-agri (%)	-0.3%	-0.15%
Headcount (mn)	**-275**	-123
Change in employment		
Skilled agri (%)	0%	0%
Headcount (mn)		
Skilled non-agri (%)	0%	0%
Headcount (mn)		

Change in wage share

The share of wages in total income in LDCs:

- **Flexible Real Wage:** did not change in the full employment closure as volume of employment (qfe) remained the same and wages (pfe) hardly changed.

- **Sticky Real Wage:** fell by a lot in the unemployment closure as 185 million people lost their jobs equivalent to about $175.8 billion foregone income (ave. wage of $950/worker).

Key Messages and Insights

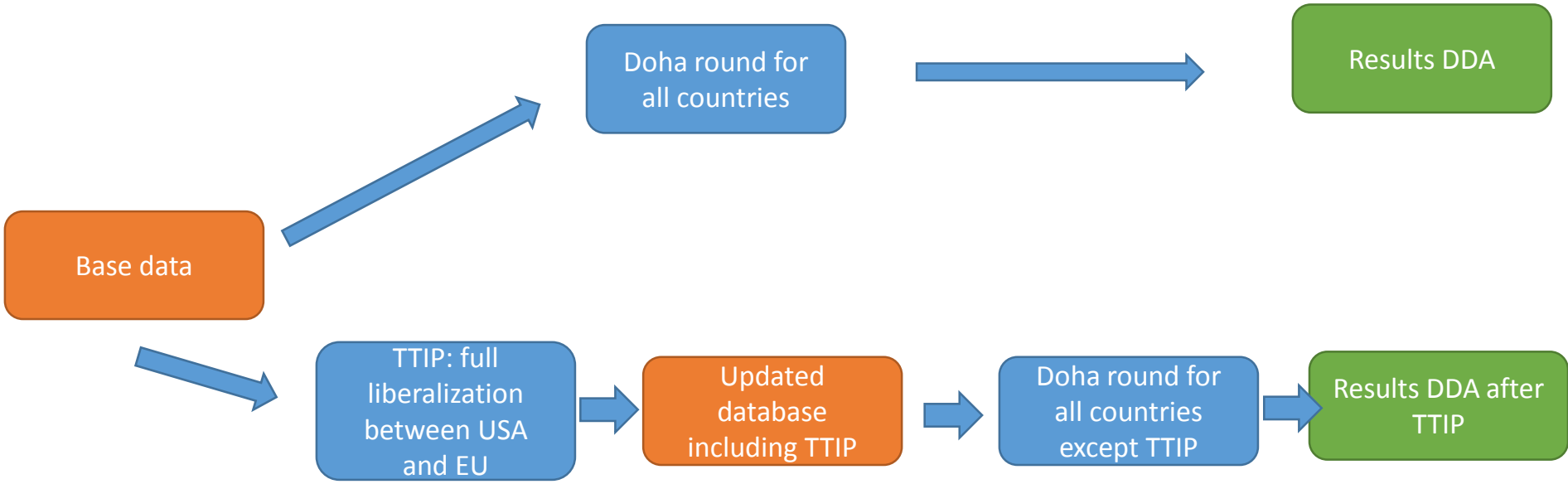
Key Messages:

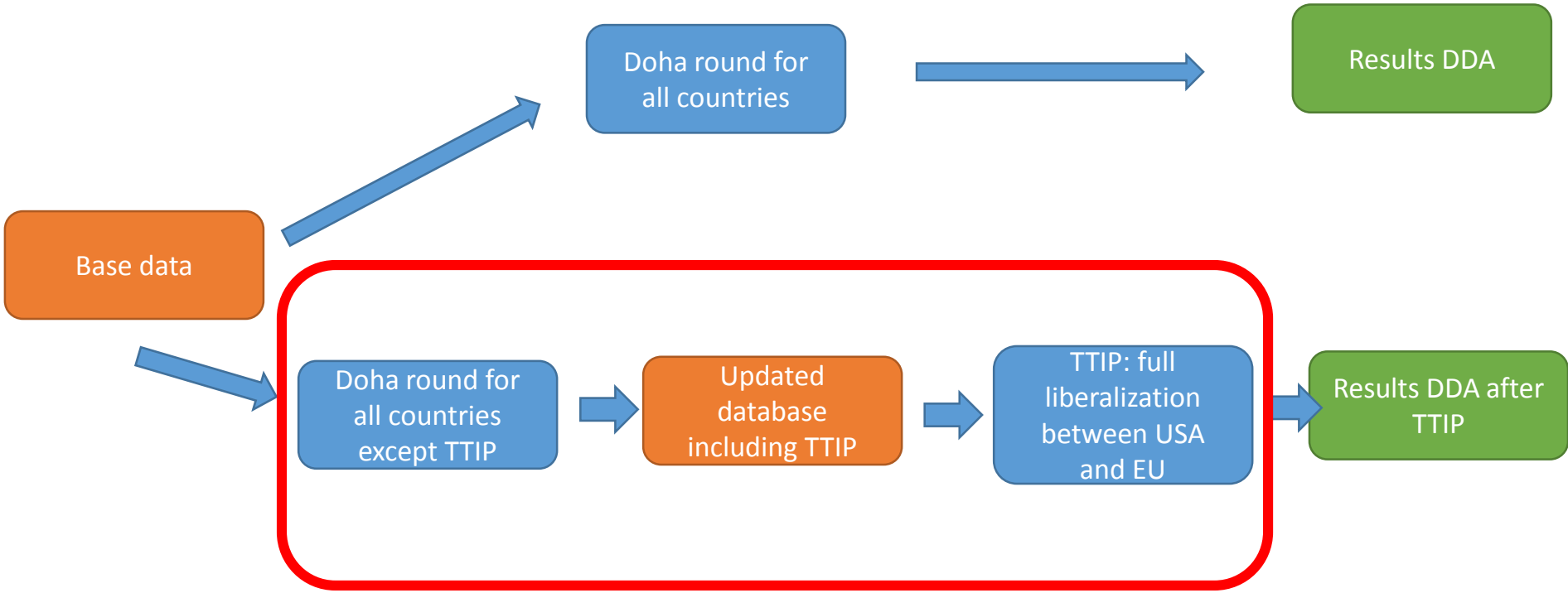
- LDCs suffer more under the sticky wages closure
- Terms of trade deteriorates more in the flexible wages closure
- Labor income share falls more under the sticky wages closure
- Unskilled labor suffers more under the sticky wages closure

Questions for future work:

- Are there limits to the degree of sticky wages?
- What would happen if sticky wages were also allowed for skilled labor?

Sequential Simulations: Building Blocks or Godzilla?


Base data
Doha round for all countries
Results DDA
TTIP: full liberalization between USA and EU
Updated database including TTIP
Doha round for all countries except TTIP
Results DDA after TTIP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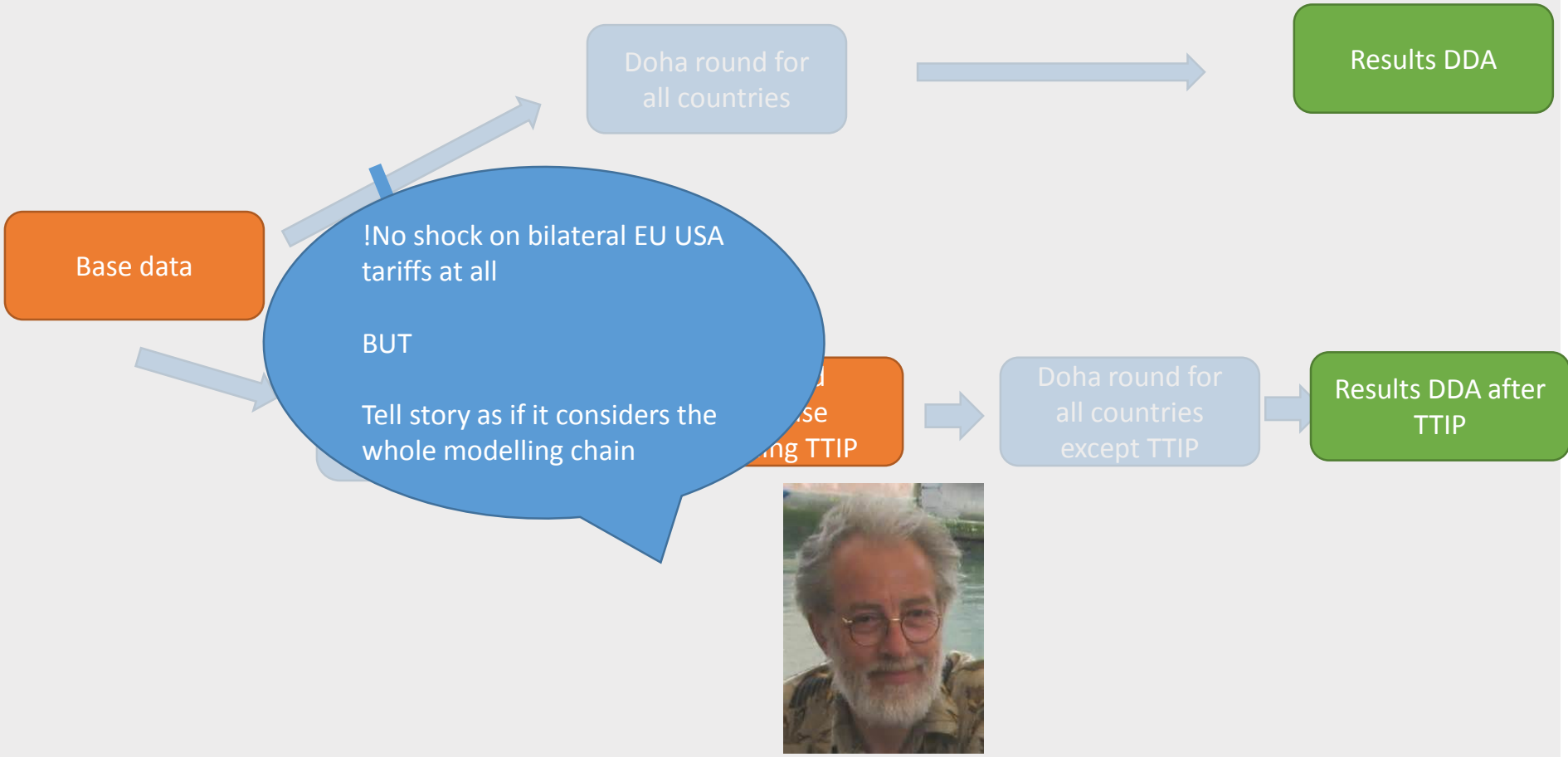
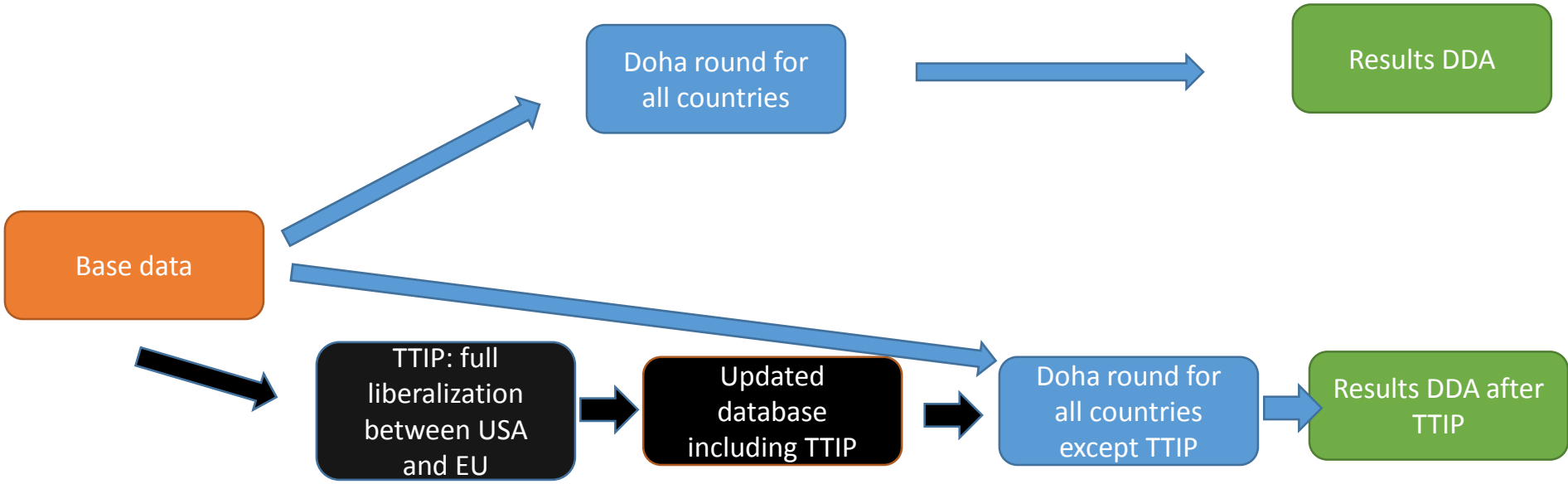

Doha round for all countries
Results DDA
Base data
!No shock on bilateral EU USA tariffs at all
BUT
Tell story as if it considers the whole modelling chain
Doha round for all countries except TTIP
Results DDA after TTIP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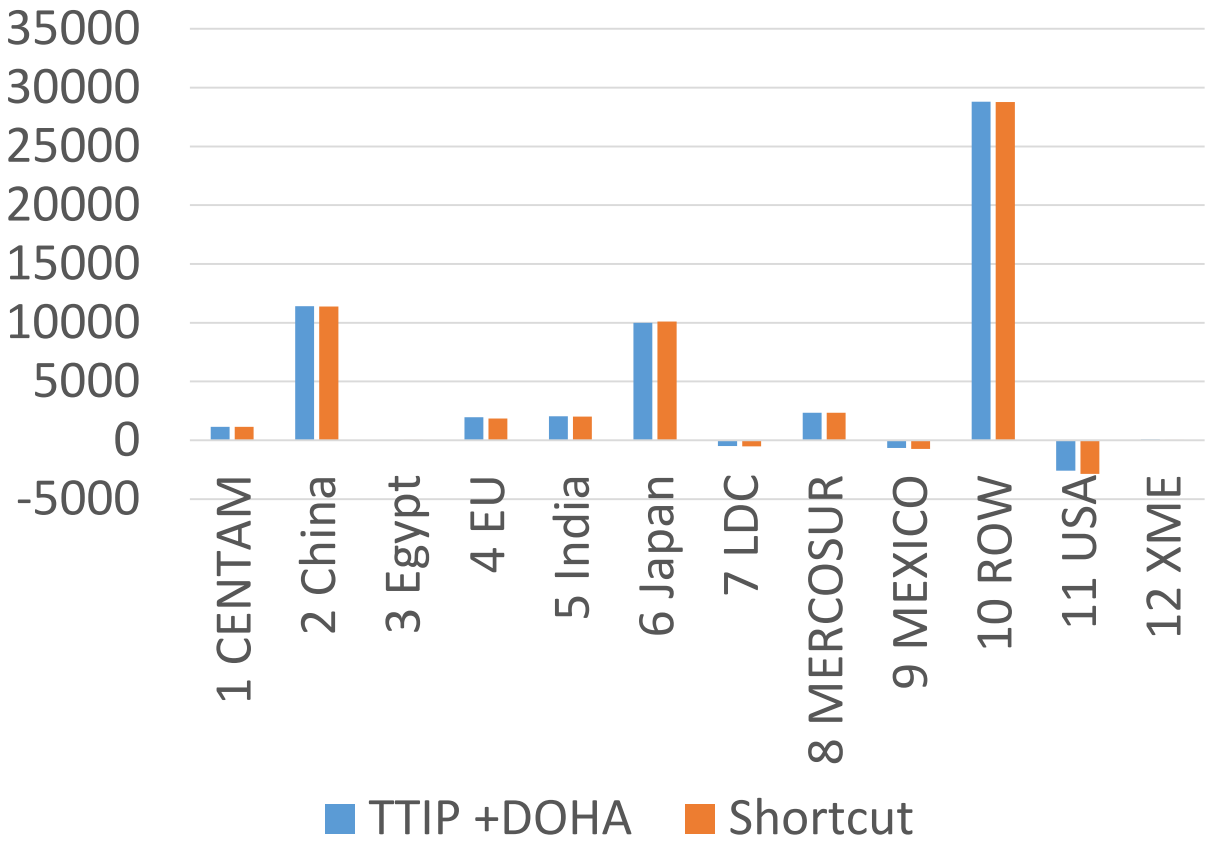
EV: Most distorted effect (value+ volume)



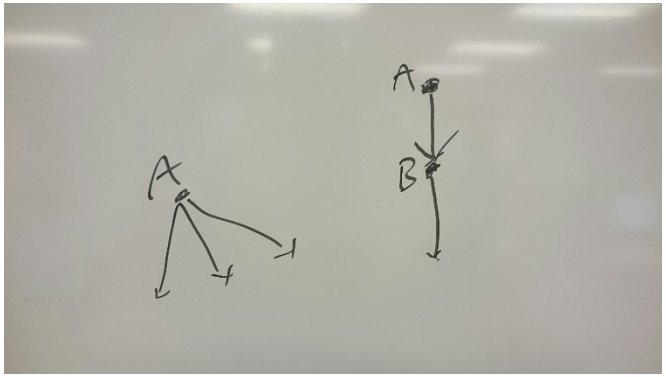
Most distorted effect (value+ volume)

EV	TTIP +DOHA	Shortcut
1 CENTAM	1160	1146
2 China	11409	11381
3 Egypt	26	20
4 EU	1961	1853
5 India	2044	2011
6 Japan	9998	10110
7 LDC	-484	-508
8 MERCOSUR	2342	2342
9 MEXICO	-651	-724
10 ROW	28803	28774
11 USA	-2572	-2846
12 XME	46	37
Total	54081	53595

Conclusions

- The order of shocks doesn’t matter. The model is perfectly linear.

- The starting point of a simulation is only of little relevance. Only when trade shares are significantly affected it matters.



Final Simulation

								Diff from
WELFARE	1 alloc_A1	2 endw_B	3 tech	4 pc	5 tot_E1	6 IS_F1	Total	Paper
1 CENTAM	313	571	0	0	331	-73	1146	54
2 China	2220	5929	0	0	3628	-397	11381	543
3 Egypt	70	78	0	0	-96	-32	20	9
4 EU	5872	0	0	0	-4285	266	1853	-1392
5 India	1143	1091	0	0	-246	23	2011	88
6 Japan	8969	0	0	0	1255	-114	10110	378
7 LDC	-173	-142	0	0	-161	-32	-508	72
8 MERCOS	530	388	0	0	1428	-8	2342	73
9 MEXICO	94	-331	0	0	-564	77	-724	213
10 ROW	15782	12061	0	0	393	539	28774	1357
11 USA	-900	0	0	0	-1658	-287	-2846	-1629
12 XME	57	0	0	0	-60	39	37	87
Total	33978	19644	0	0	-36	2	53595	-147

Difference between Doha w/ and w/o TTIP

WELFARE	1 alloc_A1	2 endw_B	3 tech	4 pc	5 tot_E1	6 IS_F1	Total
1 CENTAM	12	18	0	0	19	5	54
2 China	57	195	0	0	275	17	543
3 Egypt	0	3	0	0	5	1	9
4 EU	-730	0	0	0	-775	112	-1392
5 India	17	19	0	0	43	9	88
6 Japan	94	0	0	0	234	50	378
7 LDC	17	22	0	0	24	9	72
8 MERCOS	18	15	0	0	30	11	73
9 MEXICO	48	12	0	0	149	4	213
10 ROW	285	394	0	0	635	42	1357
11 USA	-646	0	0	0	-716	-267	-1629
12 XME	8	0	0	0	72	7	87
Total	-820	678	0	0	-5	0	-147

Impact on EU – Allocation Impact

A2	CNTalleffk
1 pfacttax	-56.7
2 prodtax	0.151
3 inputtax	-57.1
4 contax	-102
5 govtax	-0.19
6 xtax	-77.8
7 mtax	-436
Total	-730

Mainly Import Taxes

A231	TRADE
1 CENTAM	1.4
2 China	22.9
3 Egypt	0.846
4 EU	0
5 India	16.6
6 Japan	3.1
7 LDC	3.73
8 MERCOS	-1.26
9 MEXICO	0.179
10 ROW	57.4
11 USA	-542
12 XME	1.13
Total	-436

Mainly with the USA

Impact on EU – Allocation Impact

qxs	1 AppLea	2 cartrn	3 Cereal	4 Chemic	5 Con	6 Elec	7 Energy	8 Fibers	9 Lmf	10 LVS	11 MacEl	12 Min	13 Mtl
TTIP	(11)	(3)	(6)	(1)	(1)	(0)	2	(2)	(1)	(18)	(1)	(1)	(0)
NoTTIP	32	4	(3)	7	(1)	(1)	2	(3)	93	24	0	6	5
OrdDiff	(43)	(7)	(3)	(8)	0	1	(0)	1	(95)	(42)	(2)	(7)	(6)
qxs	14 oMnf	15 OSR	16 OthAg	17 pfbev	18 Rice_I	19 Rice_I	20 Textil	21 TrdFir	22 Trnco	23 Vegft	24 VegOi	25 Wdpa	26 Whea
TTIP	(2)	(0)	(25)	(3)	(72)	(89)	(10)	(0)	0	(13)	(11)	(1)	(15)
NoTTIP	0	(1)	13	22	86	102	16	(1)	(0)	(7)	(11)	(1)	(17)
OrdDiff	(2)	0	(37)	(25)	(158)	(191)	(26)	0	0	(6)	(0)	(0)	1

tms	1 AppLea	2 cartrn	3 Cereal	4 Chemic	5 Con	6 Elec	7 Energy	8 Fibers	9 Lmf	10 LVS	11 MacEl	12 Min	13 Mtl
TTIP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NoTTIP	(5.1)	(1.3)	(0.6)	(1.4)	0.0	0.0	(0.1)	0.0	0.0	(6.6)	(0.4)	(1.6)	(0.9)
tms	14 oMnf	15 OSR	16 OthAg	17 pfbev	18 Rice_I	19 Rice_I	20 Textil	21 TrdFir	22 Trnco	23 Vegft	24 VegOi	25 Wdpa	26 Whea
TTIP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NoTTIP	(0.4)	0.0	(6.8)	(6.7)	(31.3)	(27.2)	(3.4)	0.0	0.0	(2.2)	(0.2)	(0.1)	0.0

Implications for Doha

- Should complete negotiations before TTIP passes!