

This sheet shows the 1st row of an equation matrix box along with the column heads that generate the equation. An equation is then shown below the box.

Model: WDST Equation terms, first equation matrix row, and sample equation for the banked equation group - USAevar

USAp<sub>x</sub> export price (world prices with or without ftm trade premium and with export tax)

export price	non-fta or fta mem.	fta premium	export tax	world p. trans. e.	exchange rate
<b>px</b>	*((1-!ftm)	(1+FTAftf))	*(1-!tx )	WLDpx ^#)	/!xrt
<b>FOODA</b>	-	-	-	1.0	-

A ftm switch applies a free trade area (FTA) premium to exports to other FTA members if the FTA is self sufficient in a product (a maximum of trade is diverted to the FTA market).

constant \*((1-!ftm) +!ftm\*(1+FTAftf)) \*(1-!tx|) \*(WLDpx|^#) /!xrt

USAp<sub>m</sub> import price (with own, ftm, or cmm tariff and non-competitive tax)

import price	non-comp. tax	existing tariff	fta tariff	cmk tariff	world p. trans. e.	exchange rate
<b>pm</b>	*!xx	n*(1+!tm )	TAtf ,!tm ))	+CMKtc ))	WLDpx ^#)	/!xrt
<b>FOODA</b>	-	-	-	-	1.0	-

Switch makes common market members apply the common tariff instead of their own. Another switch makes the FTA import pay the FTA premium if applicable. Otherwise the applied import tariff is used.

constant \*!xx| \*((1-!ftm-!cmm)\*(1+!tm|) +!ftm\*(1+MIN(FTAftf|,!tm|)) +!cmm\*(1+CMKtc|)) \*(WLDpx|^#) /!xrt

USAx<sub>s</sub> exports

export supply	supply shift term	supply elast.
<b>xs</b>	*!fx	*!px ^#
<b>FOODA</b>	-	1.00

constant \*!fx| \*!px|^#

USAm<sub>d</sub> imports

import demand	demand shift term	demand elast.
<b>md</b>	*!fm	*!pm ^#
<b>FOODA</b>	-	-1.00

constant \*!fm| \*!pm|^#

USAnt net trade = xs - md

net trade	export supply	import demand
<b>nt</b>	+!xs	-!md
<b>FOODA</b>	-	-

constant +!xs| -!md|

USAbop balance of payments

balance payments	net trade at wld p.	capital flow
<b>bop</b>	ntCTNEC))	+!cfl)
<b>bop</b>	-	-

In Excel math, a sumproduct of two ranges can be used as an equation term (greatly simplifying the programming). Her it is used to calculate the balance of payments which is product of the world price and the net trade summed for all products.

constant +(SUMPRODUCT((WLDpxFOODA:WLDpxCTNEC),(!ntFOODA:!ntCTNEC)) +!cfl)

USAzz FTA tariff or 9

FTA tariff	FTA tariff or 9
<b>zz</b>	+(1-!ftm)*9
<b>FOODA</b>	-

constant +!ftm\*!tm|+(1-!ftm)\*9

USAxX 1+tariff equivalent of non-competitive import demand

nc tariff equiv.	demand elast.	tariff reduct.
<b>xx</b>	p/(ABS(#))	0001+!bt))
<b>FOODA</b>	-1.00	-

constant +((!cp/ABS(#)) \*(!tm|/(0.000001+!bt))

USAffx supply equation shift term - when switched ON, it responds to export price changes, emulating productivity responses to price changes

supply sheft	shift share	supply elast.	% price change	ON (1), OFF sw.
<b>fx</b>	+#	*#	*(!px -1)	*#
<b>FOODA</b>	0.7	1.00	-	0.000001

constant +# \*# \*(!px|-1) \*#

USAyy base trade (sum of base exports and base imports)

base trade	sum bx, bm
<b>yy</b>	+!bx +!bm
<b>FOODA</b>	-

constant +!bx|+!bm|