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# **Reconciling WTO Boxes and PSE Data in the GTAP Framework to Calculate Indicators for Domestic Support**

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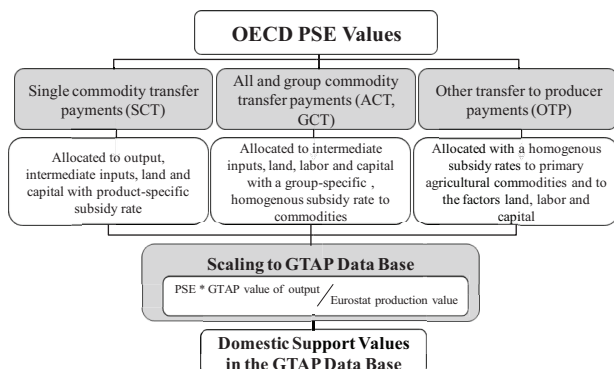
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## Reconciling WTO Boxes and PSE Data in the GTAP Framework to calculate Indicators for Domestic Support

### Introduction

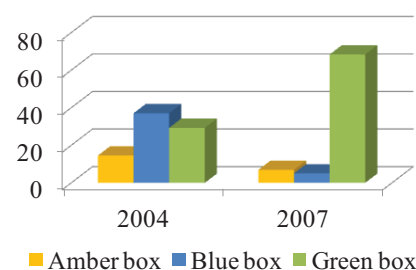
- ❖ The implementation of domestic support policies has yet received too little attention. This can be traced back to the fact that domestic support is in many cases a country specific issue. It needs elaborate work to identify the specific agricultural instruments used and corresponding adjustment of the underlying data base.
- ❖ During the last decades countries reformed their agricultural policies to fulfill the requirements of the WTO negotiations, e.g., introduction of the Single Farm Payment (SFP) in the EU.
- ❖ Most global equilibrium models do not evaluate the level of domestic support through the AMS concept of the WTO, but use the OECD's Producer Support Estimate (PSE) to represent domestic support. Employing global equilibrium models in the analysis of domestic support reduction as suggested in the WTO negotiation therefore requires the reconciliation of WTO boxes and PSE data.

### Domestic Support in the GTAP data base and model



- ❖ Extended version of the comparative static computable general equilibrium model GTAP (Global Trade Analysis Project).
- ❖ We compare the year 2004 and 2007 of the version 8.1. GTAP data base.
- ❖ The GTAP data base is aggregated to 13 regions and 23 sectors, with focus on EU25
- ❖ Agricultural domestic support in the GTAP data based on OECD producer support estimate (PSE) tables, 2004 and 2007, for the EU,
- ❖ Budgetary transfers are implemented in the GTAP data base, market price support is not included to avoid double counting

### Allocation according to the WTO box classification Mio. \$



### Mercantillist Trade Restrictiveness Index (MTRI)

- ❖ This Index is defined by ANDERSON and NEARY (2003), but based on CORDEN (1966) and measures the import value equivalent protection.
- ❖ The MTRI originally shows how strongly national protection distorts the imports from the rest of the world.

$$\tau^{\mu} : M \left[ \left( 1 + \tau^{\mu} \right) \pi^*, b^0 \right] = M^0$$

- ❖ It is defined on the basis of an aggregated tariff, resulting in the same import value at world market prices as the initial vector of non-aggregated tariffs (ANDERSON and NEARY, 2003).
- ❖ Thus the index measures the uniform tariff which keeps the value of import constant (CORDEN, 1966).

- ❖ We use the concept of the MRTI in an alternative way.
- ❖ Here the concept is used to measure the effects of a reduction in domestic support applying the following GTAP equation, which links domestic and world prices:

$$(all, i, TRAD\_COMM)(all, r, REG)(all, s, REG) \\ pms(i, r, s) = tm(i, s) + mtri(r, s) + dsmttri(i, s) + tms(i, r, s) + pcif(i, r, s)$$

- ❖ In the closure we swap dsmttri(i,s) with qiw(i,r) to keep trade constant. This swap enables us to keep all imports of commodity i into the EU25 constant.
- ❖ The dsmttri(i,s) is now endogenous and is able to adjust in the price equation. A uniform tariff can be measured by this index, which keeps the value of imports constant.

### Results MTRI

	2004		2007	
	product specific	homogenous within product groups	product specific	homogenous within product groups
wheat	4.60	-0.27	5.09	-0.31
cereal grains	6.23	-2.09	6.32	-2.12
vegetables, fruits, nuts	6.25	0.31	6.16	0.27
oil seeds	5.16	-0.04	5.16	-0.10
sugar cane, sugar beet	4.40	0.72	4.48	0.69
other crops	9.58	0.04	9.33	-0.04
cattle, sheep,	0.82	-1.37	0.81	-1.37
animal products	0.55	-2.26	0.56	-2.26

### Concluding Remarks

- ❖ We found only small changes due to domestic support reduction to zero for all relevant products → which implies that the domestic support is only minimally trade distorting.
- ❖ This can be explained by the huge amount of green box payments which are allocated according to factor shares and should not create an effect on production. During the last decade the CAP reform changed significantly to fulfill the required WTO reduction criteria. → This led to an improvement in the effective income transfer. The gradual replacement of MPS with other forms of support, primarily payments based on land labor and capital has been behind this changes. (Box shift from blue to green). Payments are not linked to current production decisions (SFP) and appear to be only minimally trade distorting.
- ❖ MARTINI and VAN TONGEREN (2011) used the OECD Policy Evaluation Model (PEM) to develop impact-based indicators of the CAP. They quantified diverse impact ad valorem indices (based as well on the MTRI) to show the impacts of the CAP and came up with similar general findings.