



# TRADE LIBERALIZATION IN A CGE: HOW IT IS IMPLEMENTED

AGRODEP Training, Monday 17<sup>th</sup> December 2012,  
Dakar.

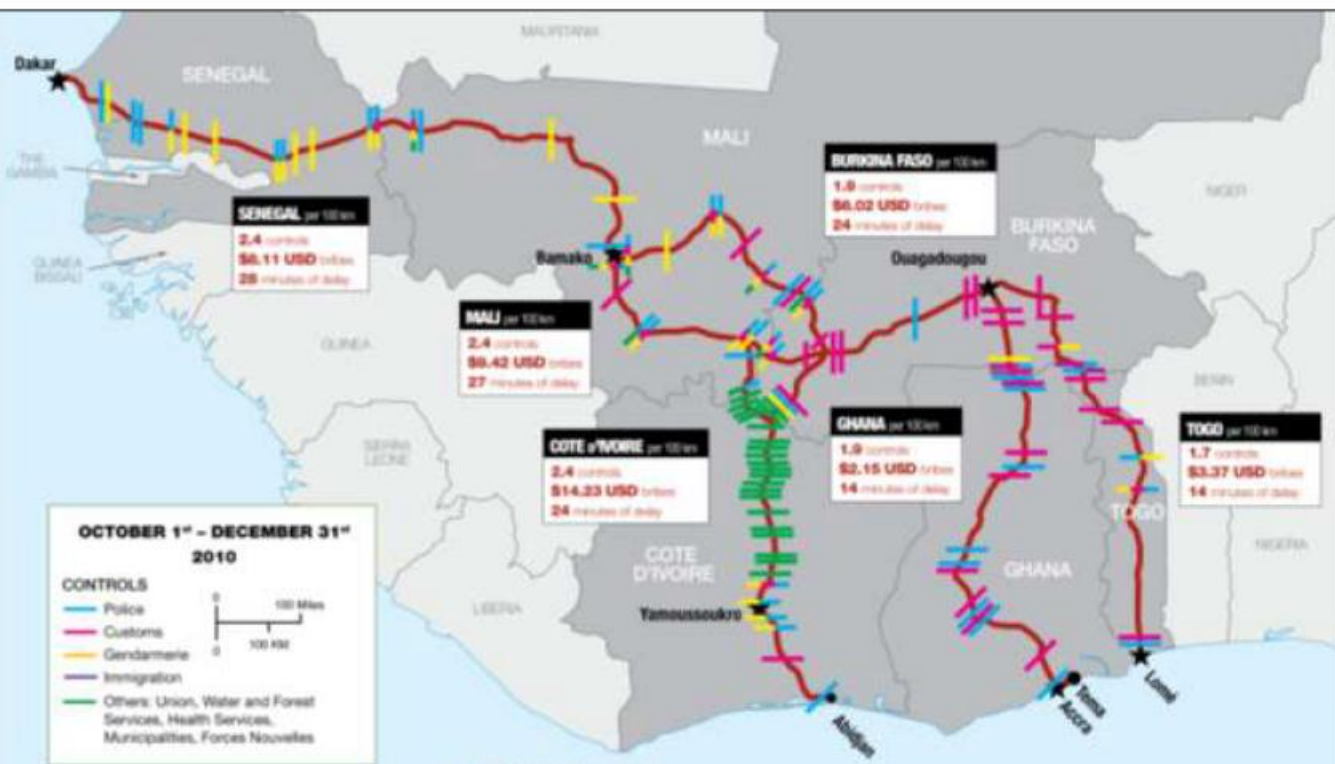
- **Tariff liberalization (MIRAGRODEP 2012)**
- NTBs
- Trade Facilitation
- Services
- **FDI (MIRAGRODEP 2013)**
- Regional integration: RA of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation (**MIRAGRODEP 2013**)
- Level of aggregation

# TRADE NEGOTIATIONS: SNAPSHOT ON AFRICA

- WTO and the Doha Round, LDCs initiative
- EPA
  - New aspects: Enlargement to Turkey
- CET and CET reform
- Simplification of the overlapping trade regimes
- GSP reform
  - EU

# REGIONAL INTEGRATION IN AFRICA

- Tariffs and beyond
- Legal NTMs
- Infrastructure
- Illegal NTMs



<http://www.watradehub.com/sites/default/files/14th%20IRTG%20Report%20small4web.pdf>

#### IRTG Results between 1<sup>st</sup> October and 31<sup>st</sup> December 2010 :

##### Controls, Bribes, Delays induced per trip

Corridor	Distance on each corridor in km	Average number of controls per trip		Average bribes in USD per trip		Delays (in minute)	
		Total	Ratio for 100 km	Total	Ratio for 100 km	Total	Ratio for 100 km
Tema – Ouagadougou	1,057	23.31	2.20	39.12	3.70	245	23
Ouagadougou – Bamako	920	28.23	3.07	110.49	12.01	234	25
Lome – Ouagadougou	1,020	18.77	1.84	40.45	3.97	181	18
Bamako – Dakar	1,476	28.15	1.91	97.96	6.64	441	30
Abidjan – Ouagadougou	1,263	25.55	2.02	98.36	7.79	296	23
Abidjan – Bamako	1,174	24.61	2.10	157.25	13.39	181	15

# QUANTIFYING A TRADE AGREEMENT A WALKTHROUGH THE DOHA ROUND

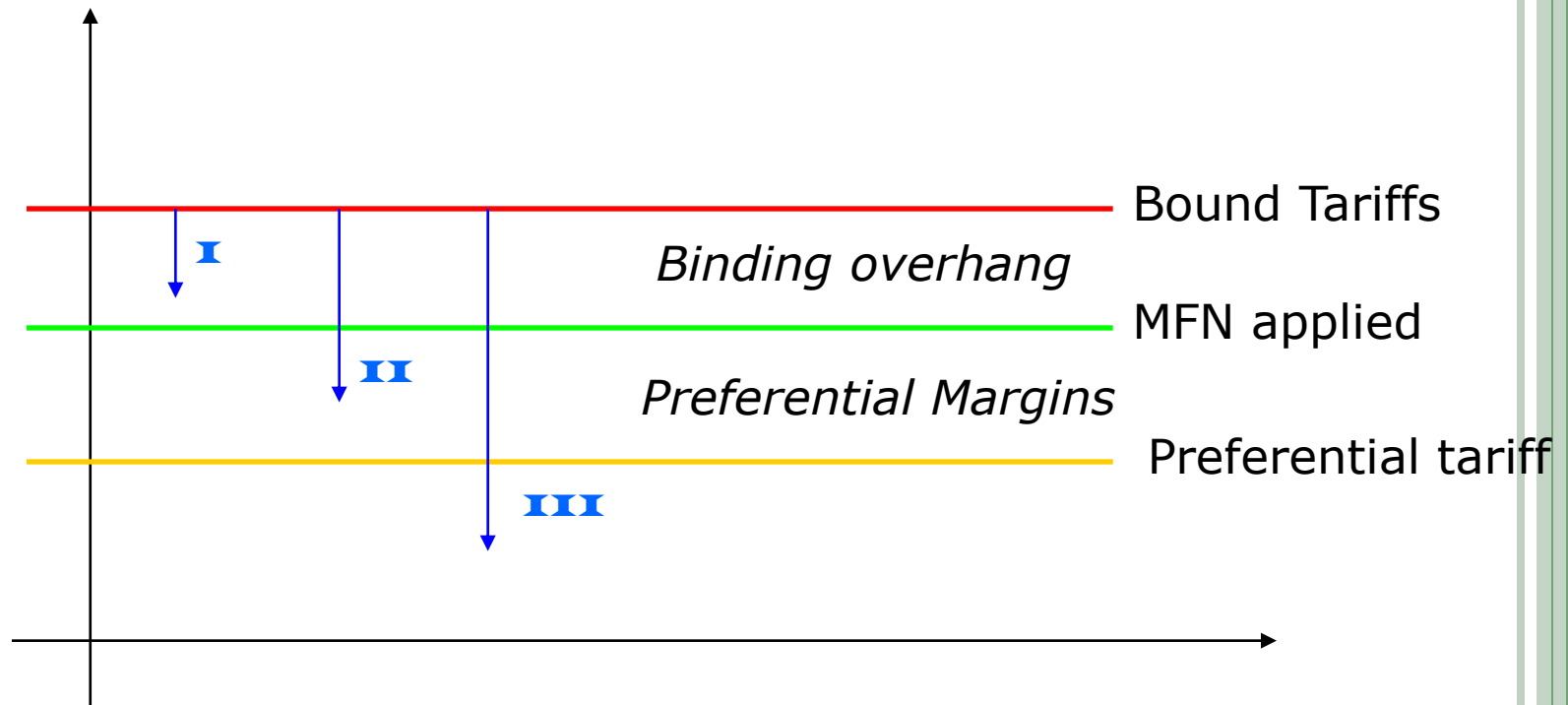


- May not look as a travel to the highest theoretical aethyr but still like moon exploration, it requires heavy engineering and new theory to deal with new, and old problems.
- **Step 1:** Assessing tariff cut effects.
  - Needs a global database at a detailed level (at least HS6) with bound and applied tariffs, including preferential agreements. Here *MAcMapHS6v2* (see Laborde 2008, Boumellassa, Laborde and Mitaritonna 2009)
  - How to deal with **flexibilities**?
- **Step 2:** Plugging information in an economic model.
  - Most powerful/used tool = Computable General Equilibrium Model, multi country, multi sector, dynamic. Here:
    - The *MIRAGE* model used at IFPRI and the *LINKAGE* model used at the World Bank
  - But how to **aggregate**
- **Caveats:**
  - We do not consider:
    - the effects of the liberalization in Services; Trade Facilitation; the links between FDI and trade; the pro-competitive/productivity enhancement effects of trade liberalization; The product diversification (new products).



# ASSESSING MARKET ACCESS CONSEQUENCES ON TARIFFS

# TARIFF CUT AT THE TARIFF LINE LEVEL

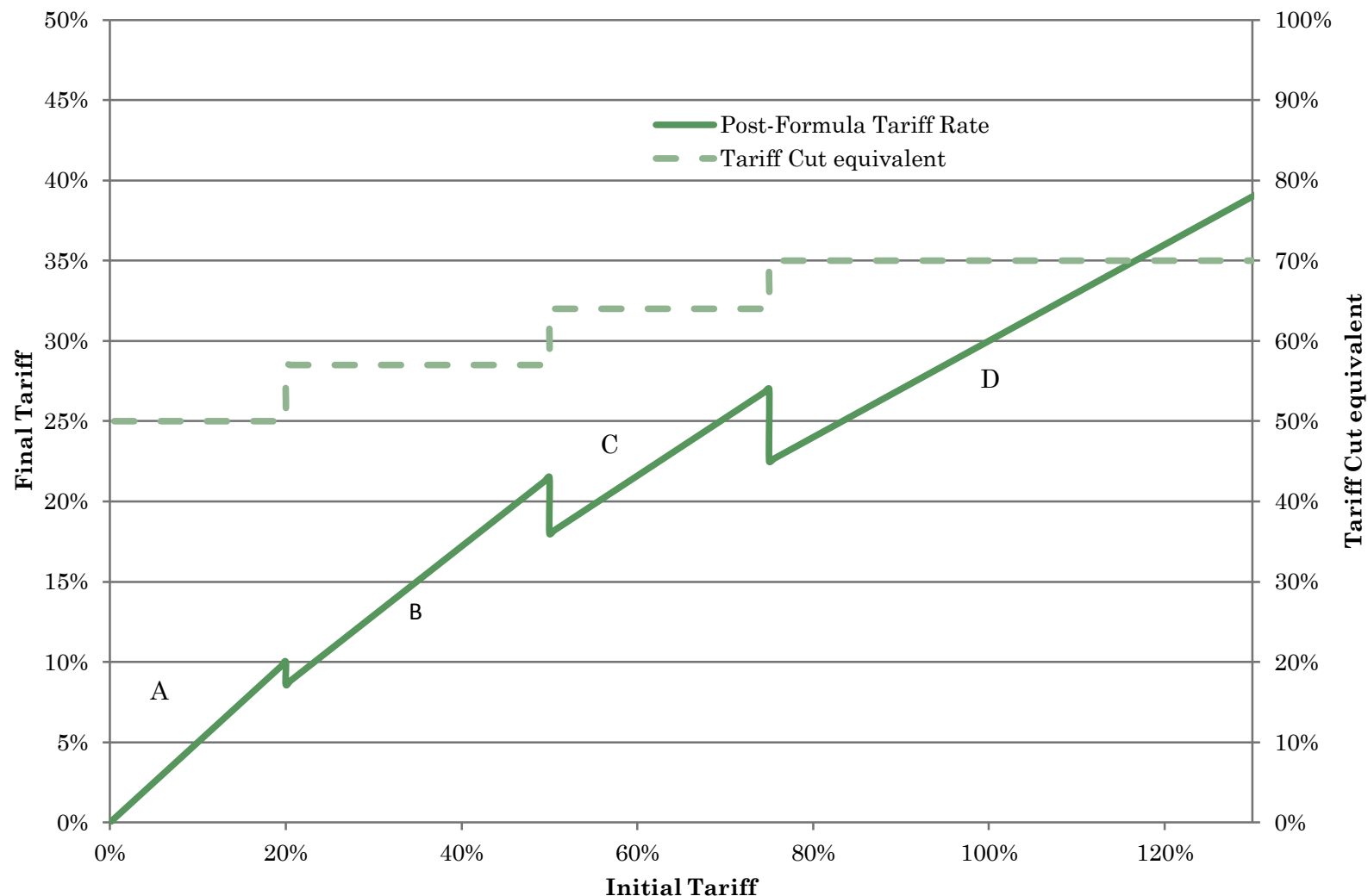




# THE TIERED FORMULA FOR AGRICULTURE

Developed			Developing	
Band	Range	Cut	Range	Cut
A	0-20	50	0-30	33.3
B	20-50	57	30-80	38
C	50-75	64	80-130	42.7
D	>75	70	>130	46.7
Average cut	Min	54%	Max	36%

# AGRIC CUTS & FINAL TARIFFS, %



# DEVELOPING COUNTRY EXCEPTIONS

- No cuts in for least-developed countries (30 members)
- Smaller cuts in small & vulnerable economies (around 50 SVEs), incl Nigeria and Côte d'Ivoire
  - Cuts [10%] smaller
  - Additional flexibilities
- Regional agreements
- Recently Acceded Members (RAMs)
  - Very RAM : no cut
  - Other RAM (inc. China) Cuts 7.5 percentage points smaller & an extra 2 years to implement
- Only 40 WTO economies under “normal” discipline (including special and differentiate treatment).
  - Egypt, Morocco, Tunisia, Turkey, UAE

# WHY FLEXIBILITIES?

- Formula-based negotiations generally involve flexibilities
  - Typically most of the negotiations are about these flexibilities
- Can probably achieve more liberalization with some flexibilities than without
- But it is hard to know what is the right amount of flexibility
  - Too much and there is no market access gain.
  - Too little and there may not be an agreement
- Sensitive products
- Special products

- Likely to be 4 or 6 % of tariff lines
  - 1/3 more for developing countries
- No. of tariff lines provides little discipline
  - Depth of cut is a more important discipline
- Cuts on sensitive prods linked to Tariff Rate Quotas (TRQ) expansion
  - 1/3 < formula if TRQ increase is 3/5% consumption
  - 2/3 less than formula if TRQ increase 4/6%
  - Opens options for tactical behavior
  - Makes them unsuited for developing countries

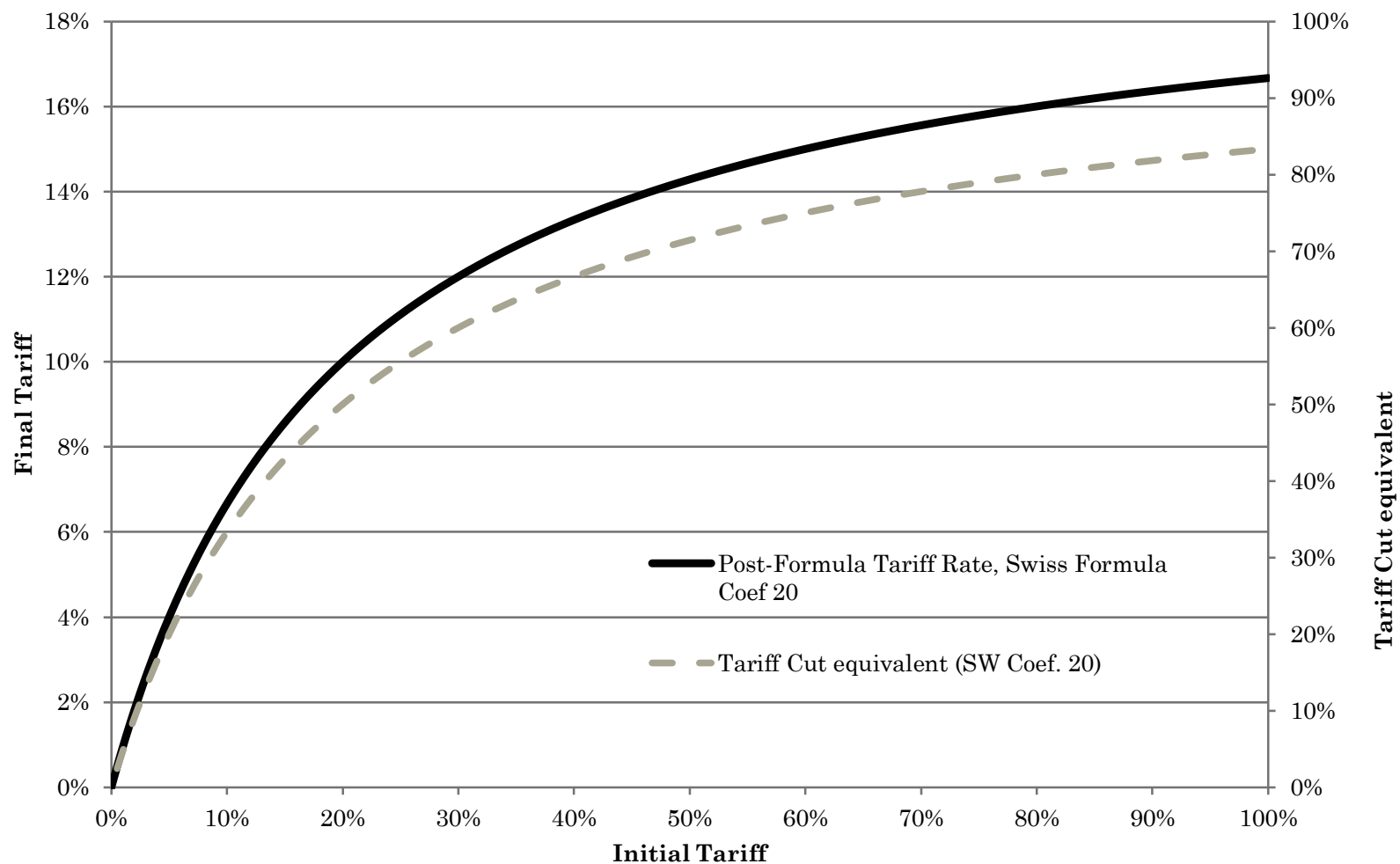
# NON-AGRICULTURAL MARKET ACCESS

- Swiss formula
  - Highest tariffs cut the most
- No final tariff,  $t_1$  above the ceiling, a

$$t_1 = \frac{a \cdot t_0}{a + t_0}$$

- Industrial country ceiling of 8%, ceilings for developing countries, 20, 22, 25%
  - Only developing countries have flexibilities

# SWISS FORMULA TARIFF CUTS



- LOOK at TASTE documentation on the AGRODEP website to have a discussion on tariff cutting formula
- 6 different scenarios analyzed
- Presentation limited to 3
- The **Baseline**, scheduled evolution of tariffs without the DDA. e.g. :
  - recent/new WTO members commitments
  - new FTA/CU
  - GATT Article XXVIII – DS related)
  - ....
- B - Formula without flexibilities (pure formula)
- D - Formula plus flexibilities (both for countries and products)





# DEALING WITH FLEXIBILITIES

A theoretical approach (from Jean, Laborde and Martin, 2011, WBER)

Jean, S., Laborde, D. and Martin, W. (2006),  
Consequences of Alternative Formulas for  
Agricultural Tariff Cuts, in Anderson, K. and  
Martin, W. eds. Agricultural Trade Reform and  
the Doha Development Agenda with the use of  
different ad-hoc criteria:

- Top bound rates
- Top MFN applied rates
- Tariff revenue loss
  - Combining an "intensity" parameter (tariffs) with a "size" (trade) parameter
  - Sensitive products selection endogeneous to the liberalization features (formula, binding overhang).
  - Tariff revenue argument

# A POLITICAL ECONOMY MODEL

- Grossman, G. and Helpman, E. (1994), 'Protection for Sale', American Economic Review 84(4): 833-50 September.
- Bagwell, K. and Staiger, R. (2002), The Economics of the World Trading System. MIT Press, Cambridge.
- Our political objective function

$$W(p, u, v) = -e(p, u) + g(p, v) + z_p(p - p^*) + h'p$$

where

- $e$  is the consumer expenditure function, defined over a vector of domestic prices,  $p$  and the utility level of the representative household,  $u$ ;
- $g(p, v)$  is a net revenue or GDP function defined over domestic prices and a vector of specific factors,  $v$ ;
- $p^*$  is the vector of foreign market prices for traded goods, so that  $(p - p^*)$  gives tariff rates; ·
- $z_p$  is a vector of net imports;  $z_p (p - p^*)$  is tariff revenues

- the elements of  $h$  are the differences from the unitary weights on benefits to consumers, producers and taxpayers used in the Balance of Trade function (see Anderson and Neary 1992)
- Anderson (1986), Lindert (1991) and Grossman and Helpman (1994)
  1. the ability to overcome the barriers to effective organization created by free-rider problems;
  2. the impact of own output prices on the returns to specific factors in that sector;
  3. the adverse impacts on the costs of other politically-influential groups of protecting a particular sector;
  4. the ratio of imports to total domestic consumption that determines the balance of benefits between tariff revenues and transfers to producers.
- Due to the lack of an explicit detailed model of each economy, we must treat the elements of the  $h$  vector as reduced form coefficients.

# MAIN STEPS FOR SOLVING THE MODEL

- National subgame
- Two approaches
  - First difference approach [1]
    - CES framework to consider cross price effects

$$\frac{\Delta W_i}{e} = \frac{1}{2} s_i \sigma \hat{p}_i [-(1 + s_i) \hat{p}_i + 2C] \quad \text{where } C = \sum_j s_j \hat{p}_j$$

- Non Linear Integer Optimization program [2]
  - CES Expenditure function and demand

- G20 formula
- MacMapHS6v1 database with Bound tariffs extension.
- Trade weighted average:
  - is biased downwards for highly-protected products
  - neglects the fact that the costs of individual tariffs rise with the square of the tariff
- Sensitive products = half of the cut

# SENSITIVE PRODUCT LIST

## Developed

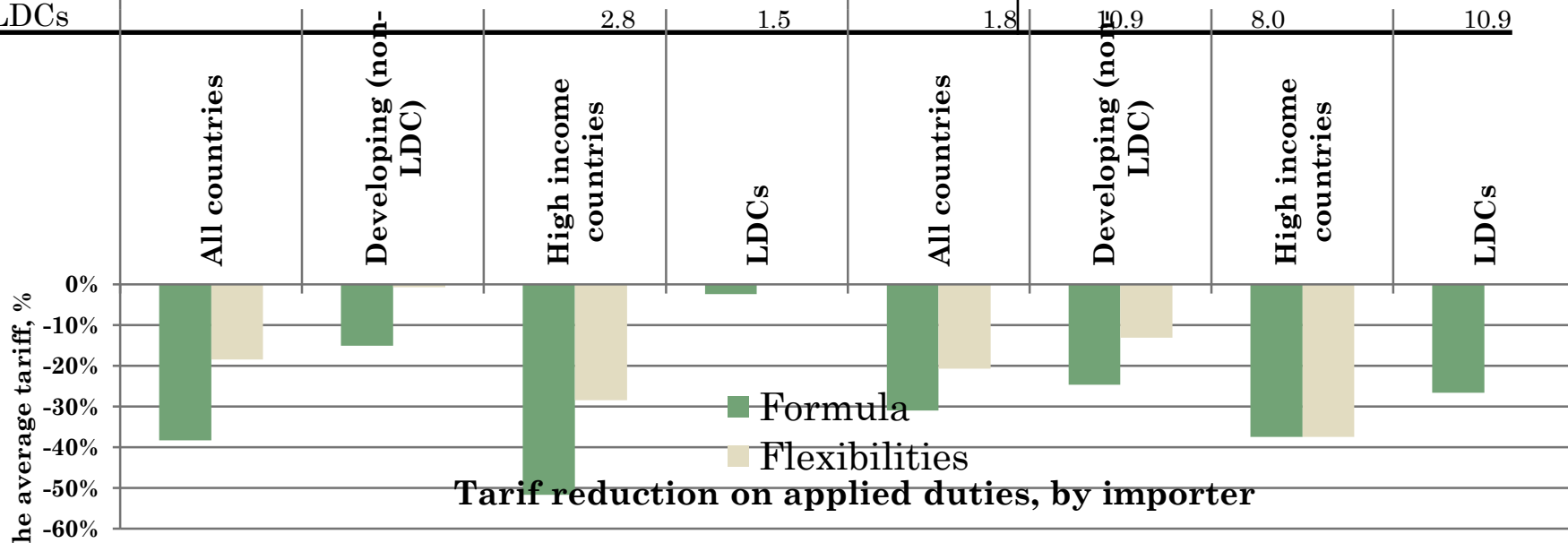
WHEY WHETHER OR NOT CONCENTRATED OR SWE  
YOGURT WHETHER OR NOT FLAVOURED OR CONT  
SEMI MILLED OR WHOLLY MILLED RICE  
FROZEN CUTS AND EDIBLE OFFAL OF FOWLS OF  
MAIZE STARCH  
SHELLED GROUND NUTS WHETHER OR NOT BROK  
BUTTER EXCL. DEHYDRATED BUTTER AND GHEE  
MILK AND CREAM OF A FAT CONTENT BY WEIGH  
BLUE VEINED CHEESE  
MILK AND CREAM IN SOLID FORMS OF A FAT  
BUTTERMILK CURDLED MILK AND CREAM KEPH  
**WHISKIES**  
RAW CANE SUGAR EXCL. ADDED FLAVOURING O  
**CIGARS CHERROOTS CIGARILLOS AND CIGARET**  
SOYA BEANS WHETHER OR NOT BROKEN  
BIRDS' EGGS IN SHELL FRESH PRESERVED  
OLIVE OIL AND FRACTIONS EXCL. VIRGIN AN  
CHEESE EXCL. FRESH CHEESE INCL. WHEY C  
**SPIRITS OBTAINED BY DISTILLING GRAPE WIN**  
REFINED CANE OR BEET SUGAR CONTAINING A

## Developing

**CIGARETTES CONTAINING TOBACCO**  
CANE OR BEET SUGAR AND CHEMICALLY PURE S  
**WHISKIES**  
**BEER MADE FROM MALT**  
**WINE OF FRESH GRAPES INCL. FORTIFIED WI**  
NON ALCOHOLIC BEVERAGES EXCL. WATER FR  
FROZEN CUTS AND EDIBLE OFFAL OF FOWLS OF  
SUGAR CONFECTIONERY NOT CONTAINING COCOA  
CHEWING GUM WHETHER OR NOT SUGAR COATED  
SWEET BISCUITS WAFFLES AND WAFERS WHET  
PREPARATIONS FOR SAUCES AND PREPARED SAU  
**LIQUEURS AND CORDIALS**  
BREAD PASTRY CAKES BISCUITS AND othr  
**RUM AND TAFFIA**  
SPIRITS OBTAINED BY DISTILLING GRAPE WIN  
RAW CANE SUGAR EXCL. ADDED FLAVOURING O  
SAUSAGES AND SIMILAR PRODUCTS OF MEAT  
**VODKA**  
**ETHYL ALCOHOL OF AN ALCOHOLIC STRENGTH B**  
BONELESS FROZEN MEAT OF BOVINE ANIMALS

# AVERAGE TARIFF REDUCTION

Applied tariffs faced on exports				Applied tariffs on imports		
Agricultural Market						
Access	Base	Formula	with flexibilities	Base	Formula	with flexibilities
All countries	14.6	9.0	11.9	14.6	9.0	11.9
Developing (non-LDC)	14.3	8.6	11.5	13.3	11.3	13.2
High income countries	15.1	9.3	12.3	15.5	7.5	11.1
LDCs	7.4	6.5	7.1	12.5	12.2	12.5
Non Agricultural Market						
Access	Base	Formula	with flexibilities	Base	Formula	with flexibilities
All countries	2.9	2.0	2.3	2.9	2.0	2.3
Developing (non-LDC)	2.9	1.9	2.1	6.1	4.6	5.3
High income countries	3.0	2.1	2.4	1.6	1.0	1.0
LDCs	2.8	1.5	1.8	5.9	8.0	10.9

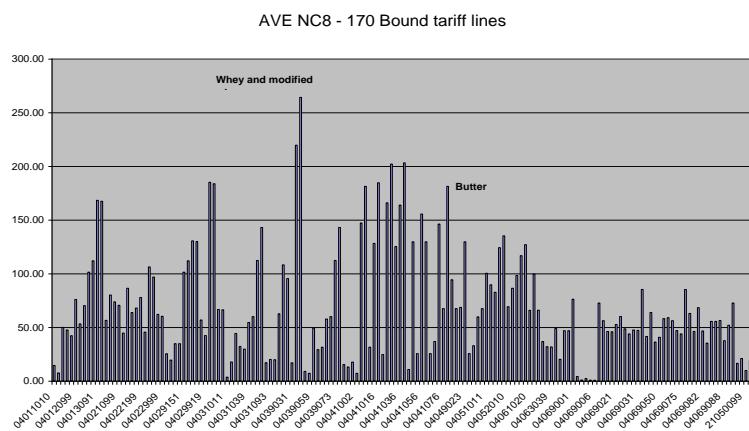






# THE CHALLENGE OF TARIFF AGGREGATION

- Tariffs (and tariff equivalents) are highly diverse
  - Illustration the EU dairy sector



- Trade negotiations aimed to reduce tariff dispersion
  - Harmonizing formulas
- Welfare costs rise with distortions

- Typically aggregate from 10,000 tariff lines to 20-25
  - Even largest databases, will have fewer than 40 traded sectors
  - Enormous waste of information
- Can we do better?
  - Yes we can
  - Yes we must
  - Have *the theory* and the data to do better
    - The data: MAcMapHS6 database (<http://www.ifpri.org/book-5078/ourwork/program/macmap-hs6>) , the TASTE software (<http://www.ifpri.org/book-5080/ourwork/program/taste-tariff-analytical-and-simulation-tool-economists>) .

- Tariff revenue?
  - Theoretical tariff revenue
    - Tariffs x Trade
  - Collected custom duties (but not customs revenue!)
- Discrepancies:
  - Difference in trade... even in the sectoral value is right
  - Official tariff suspension/waivers
  - Unofficial tariff exemption (= corruption)
- What to do:
  - Focus on official tariffs (including preferences): it matters for trade negotiations
  - Discrepancies can be handle in the model but requires different modeling assumptions (marginal vs average collect efficiency)

# HOW TO AGGREGATE

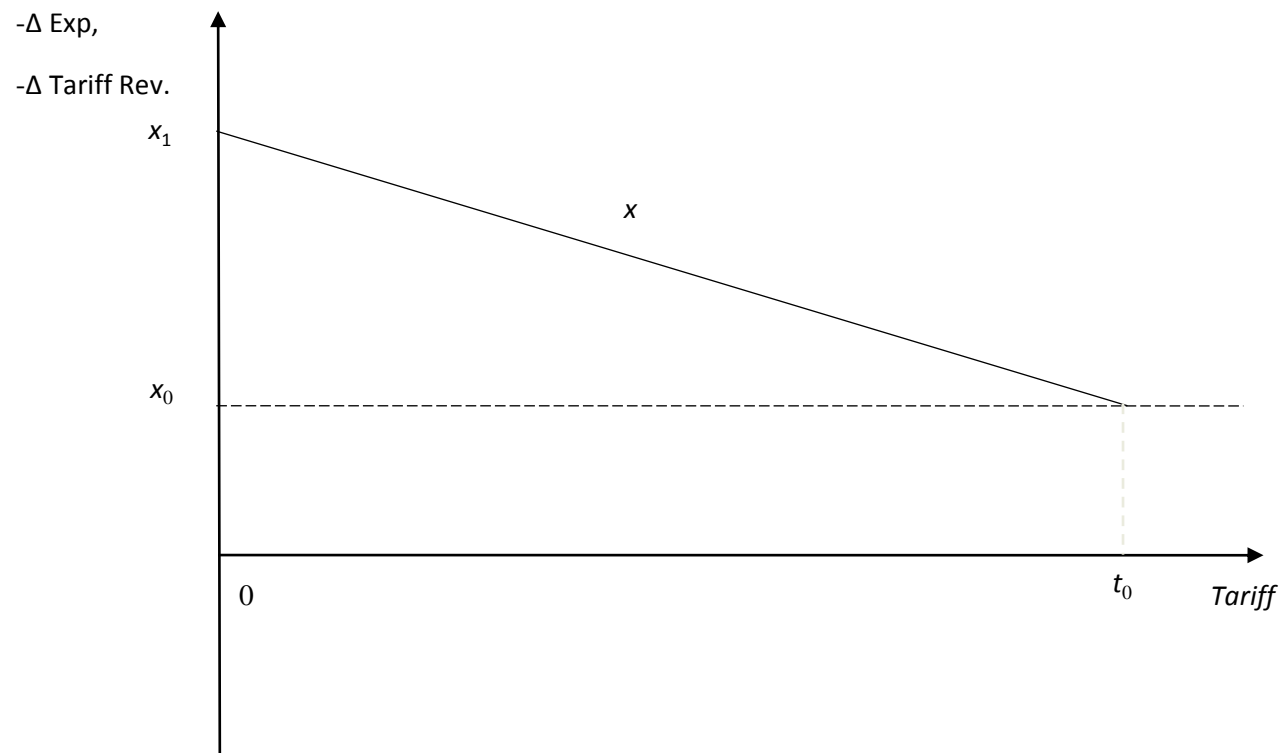
- Appropriate aggregator depends on the objective of aggregation
  - Weighted average tariff is *ad hoc*
- What possible objective function?
  - Expenditure
  - Tariff revenue
  - Mercantilist aggregator
    - Value of exports at world prices

- Can characterize an economy using a *Balance of Trade* function
- $B = e(p,u) - r(p,v) - z_p(p-p^w)$ 
  - $e(p,u)$  = Expenditure need to achieve utility  $u$
  - $r(p,v)$  = Max revenue at price  $p$ , with resources  $v$
  - $z_p(p,u,v) = (e_p - r_p)(p - p^w) =$  Tariff revenues

## WHY AGGREGATION MATTERS: LIBN

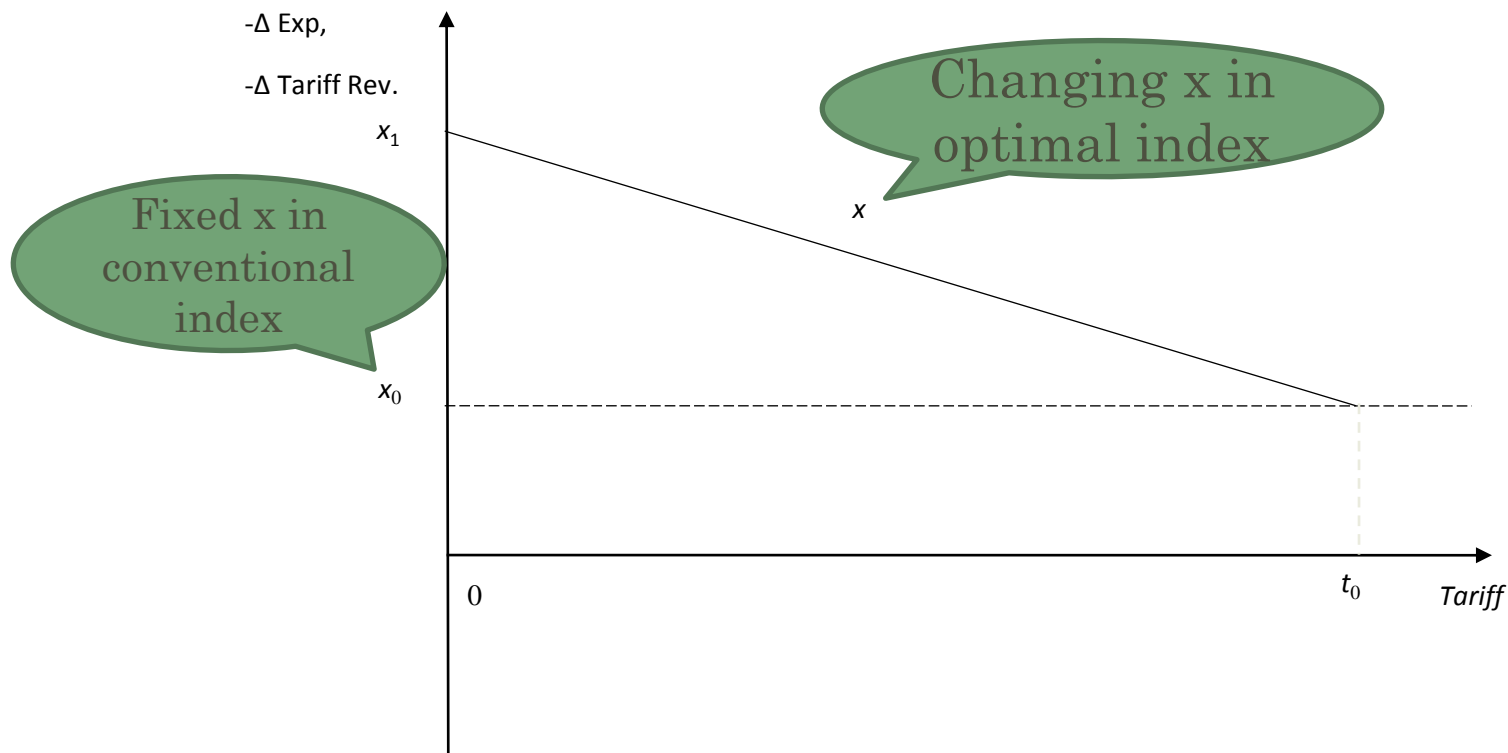
- Within the group, a tariff cut reduces expenditure (good)
  - at the slope of the expenditure function,  $e_p$
  - which determine quantities demanded, & terms-of-trade effects in a global model
- Tariff decline reduces revenue (bad)
  - at a rate given by the slope of the revenue function:
    - $e_p + (p - p^w)e_{pp}$
- Miss these within-group gains if we use the same aggregator for expenditure & revenue

# EXPENDITURE WEIGHT

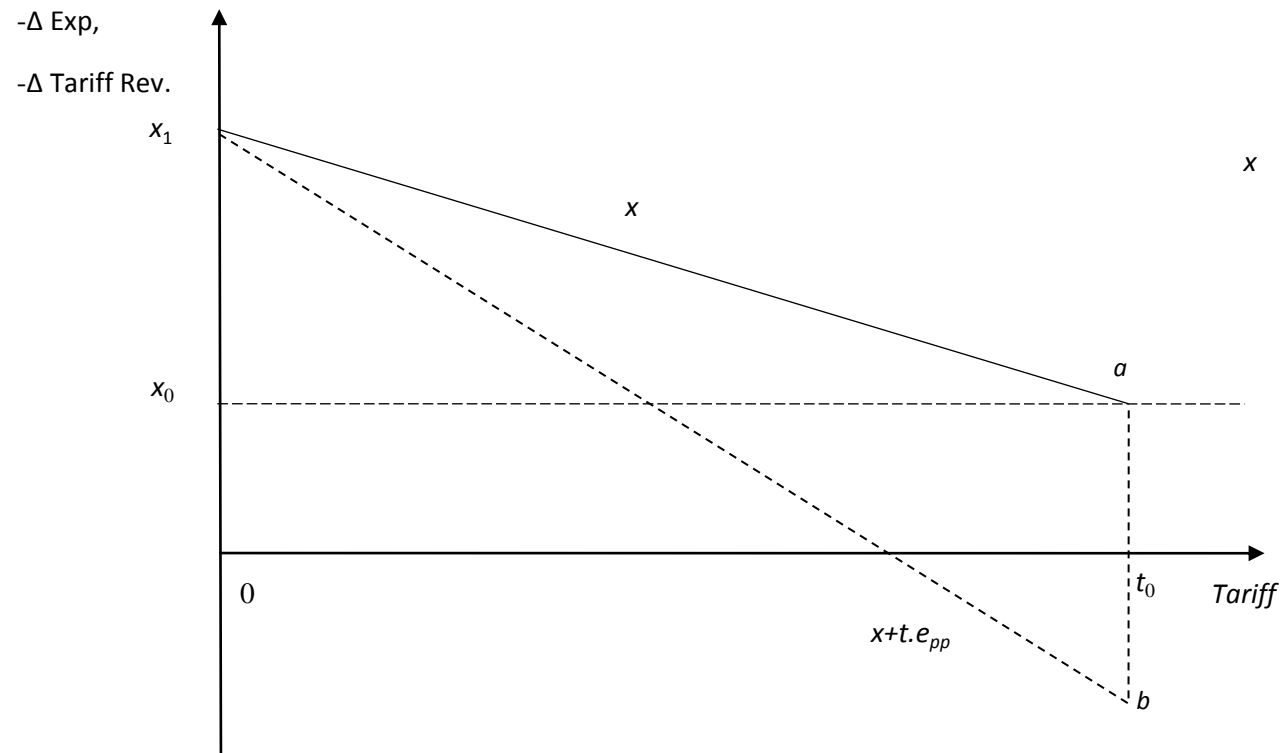




# EXPENDITURE CHANGE WEIGHT



# IMPACT OF CHANGE IN P ON TARIFF REV.



- We need to capture changes in the price dispersion
  - True price index
  
- We need to capture the right “average” tariff
  - “trade” Weights are endogenous
  
- We aggregate over several dimensions:
  - Products
  - Exporters
  - Importers

FACILITATED BY IFPRI 

- Walras' law a problem at the global level
  - Couldn't solve as income didn't equal expenditure
- Jim Anderson distinguishes quantities at domestic ( $u_i$ ) & world prices ( $x_i^*$ )
- $u_i = x_i^* (1 + \tau_i^R) / (1 + \tau_i^e)$
- Which allows global adding up
  - $u_i (1 + \tau_i^e) p^w = x_i^* (1 + \tau_i^R) p^w$
- **IMPLEMENTATION IN THE CGE:**
  - Modify model to distinguish quantities at domestic and at world prices
  - Calculate the expenditure and tariff revenue aggregators
  - Simulate impacts of changes

# COMPUTING AGGREGATES

- Compute the expenditure tariff aggregator  $y$  using a domestic price index

- $P = PCIF * \left( \sum_i \alpha_i (1 + t_i)^{1-\sigma} \right)^{1/(1-\sigma)}$
- $\tau^e = P/PCIF - 1$

# TARIFF REVENUE AGGREGATOR

- Initial tariff

$$\tau_0^R = \frac{\sum v_i^0 \times t_i^0}{\sum v_i^0}$$

- Where  $v_i$  is the value of imports of i

- Final tariff

$$\tau_1^R = \frac{\sum v_i^0 \left\{ \frac{1+t_i^0}{1+t_i^1} \right\}^\sigma \times t_i^1}{\sum v_i^0 \left\{ \frac{1+t_i^0}{1+t_i^1} \right\}^\sigma}$$

## ○ Modify MIRAGE/LINKAGE model to distinguish quantities at domestic and at world prices

2. The  $PDEM(i, r, s)$  has to be redefined and to be consistent with the preferences assumed. The true price index of the aggregate will react not only to the change in the average tariff (captured by  $T_A^{1*}(i, r, s)$ ) but also by the tariff structure between HS6 prices (relative prices).

In consequence, we need to add two variables -  $PDEMA$  and  $DEMA$  - and two equations:

- define a new equation:

$$PDEMA(i, r, s) = PCIF(i, r, s) \times TPI(i, r, s) \quad (1)$$

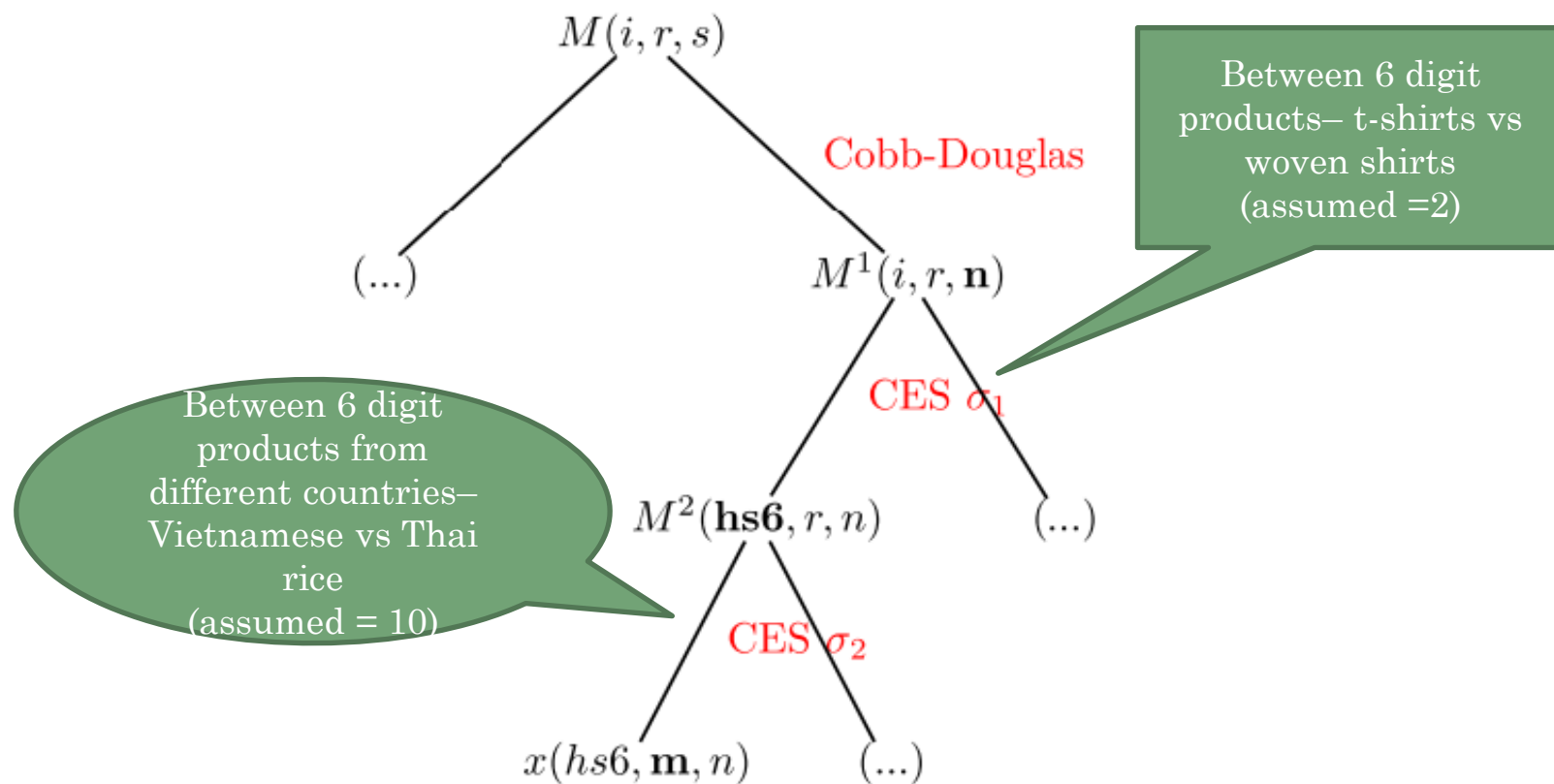
with  $PDEMA$  the true domestic price and  $TPI$  a new exogenous variable that will reproduce the changes in relative prices at domestic prices across HS6 products;

- define a new equation

$$PDEMA(i, r, s) \times DEM A(i, r, s) = DEM(i, r, s) \times PCIF(i, r, s) \times (1 + T_A^{1*}(i, r, s)) \quad (2)$$

used to define  $DEMA$  and to ensure consistency between international traded volume  $DEM(i, r, s)$  and domestic volume  $DEMA(i, r, s)$ .

# NESTING STRUCTURE





# RESULTS FOR FULL LIBERALIZATION

	Real income (%)		Terms of trade (%)		Export Volume (%)	
	Trade Weighted Aggregator	Optimal Aggregator or	Trade Weighted Aggregator	Optimal Aggregator	Trade Weighted Aggregator	Optimal Aggregator
World total	0.50	0.88	0.00	0.00	7.1	8.3
Low and middle income c.	0.58	1.30	-0.28	-0.08	14.8	16.6
Bangladesh	-1.44	-1.03	-2.26	-2.12	56.6	61.2
Chile	0.30	0.06	0.13	-0.08	0.1	-0.3
India	0.60	1.24	-0.52	-0.28	46.9	51.3
Mexico	-0.02	0.35	-0.61	-0.55	7.8	8.8
Nigeria	4.68	6.30	-1.95	-1.96	14.1	14.3
Turkey	1.03	2.21	0.22	0.76	9.3	13.8
Morocco & Tunisia	2.77	5.82	-2.90	-1.79	60.1	67.2
SACU	0.96	2.25	0.04	0.00	14.5	19.0
R. of Sub Saharan Africa	-0.44	-0.55	-1.75	-2.13	23.8	23.7
High income countries	0.48	0.76	0.08	0.02	3.9	4.9
Australia & New Zealand	0.46	0.59	0.37	0.40	9.0	9.9
EU 27	0.44	0.96	-0.04	-0.18	2.1	3.1

# REAL INCOME EFFECTS OF THE DOHA ROUND, BNS USD (NO DFQF SCENARIO HERE)

	Total liberalisation		Doha formula cuts			Doha with flexibility		
	Weighted average	$\sigma = 2$	Weighted average	$\sigma = 2$	$\sigma = 5$	Weighted average	$\sigma = 2$	$\sigma = 5$
Indonesia	2.8	3.9	1.3	1.5	3.8	1.0	1.0	1.0
Thailand	6.6	8.7	3.7	4.5	5.7	1.8	2.6	4.2
Mexico	5.7	10.1	4.1	4.7	5.5	3.7	4.7	5.8
SACU	3.8	14.1	1.2	1.4	1.9	0.7	1.3	2.2
Turkey	8.2	11.3	1.5	1.6	1.7	0.4	0.5	0.6
Rest of Asia	6.8	24.5	2.4	2.9	7.3	-1.6	-1.2	-0.3
Rest of Latin America and the Caribbean	11.8	18.5	4.9	6.4	7.6	2.2	2.5	2.8
Rest of the world	26.4	64.3	2.2	3.8	4.9	1.4	1.9	2.5
Morocco and Tunisia	3.5	6.1	1.8	2.4	3.2	0.9	1.6	2.7
Rest of sub-Saharan Africa	6.4	9.4	1.7	2.3	3.1	-0.6	-0.6	-0.6
High-income countries	384.4	484	116.6	140.6	175.6	71.3	90.7	117.6
WTO developing countries	217.2	369.1	69.2	85.8	120.9	34.0	42.9	56.7
Low- and middle-income countries	111.4	241.2	46.5	61.5	95.1	22.2	30.7	43.7
Latin America and the Caribbean	41.5	61.6	16.9	21.3	29.2	10.4	12.1	14.8
Sub-Saharan Africa	13.2	30.4	4.8	6.6	9.0	0.1	0.6	1.5
World total	495.8	725.2	163.1	202.1	270.7	93.5	121.4	161.3



# IMPLEMENTATION

Excel interface, GAMS, and outputs



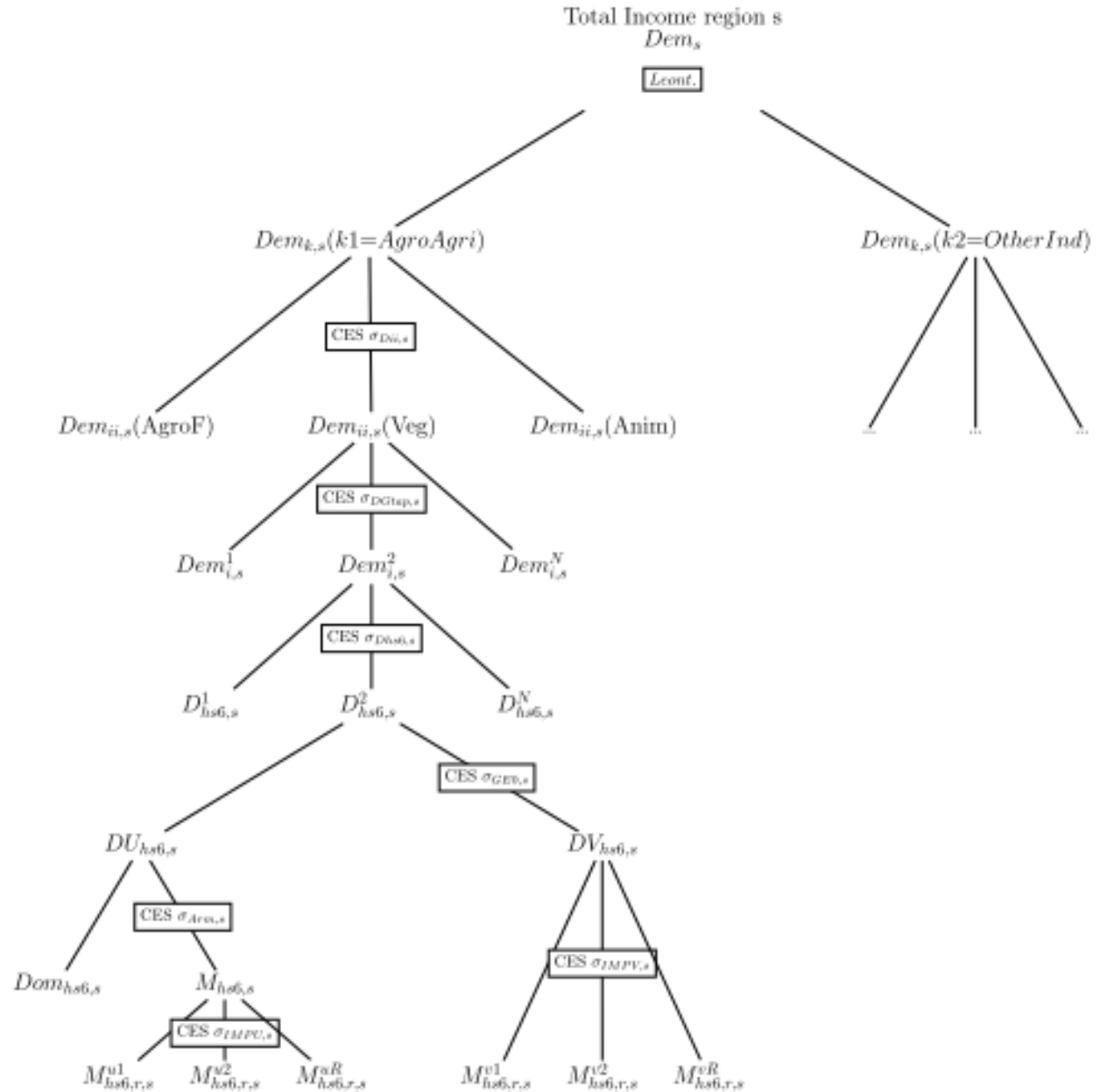
# AGGREGATION OR DISAGGREGATION OF PRODUCTS

- Trade policies are in the details
  - Negotiations are in the details
  - Different technologies, different goods
  - Avoid aggregation problems
  - Dealing with quantities
- 
- Average results = small results. Positive and negative effects cancelled out.
  - Be relevant for policy makers and private sectors
- 
- Be careful: adjust your level of aggregation to your time frame!

# PE AT THE HS6 LEVEL: AN ILLUSTRATION

- Simple example: Excel workbook (no cross price elasticity)
- More advanced exercises:

*An impact study of the EPA in the 6 ACP regions, Fontagne, Laborde and Mitaritonna. JAE (2011)*



# DISAGGREGATING GE MODELS

- New sectors/New technologies
- Disaggregating products within existing sectors



Figure 3: ACP trade with the EU. Distribution of trade changes by hs6 product.

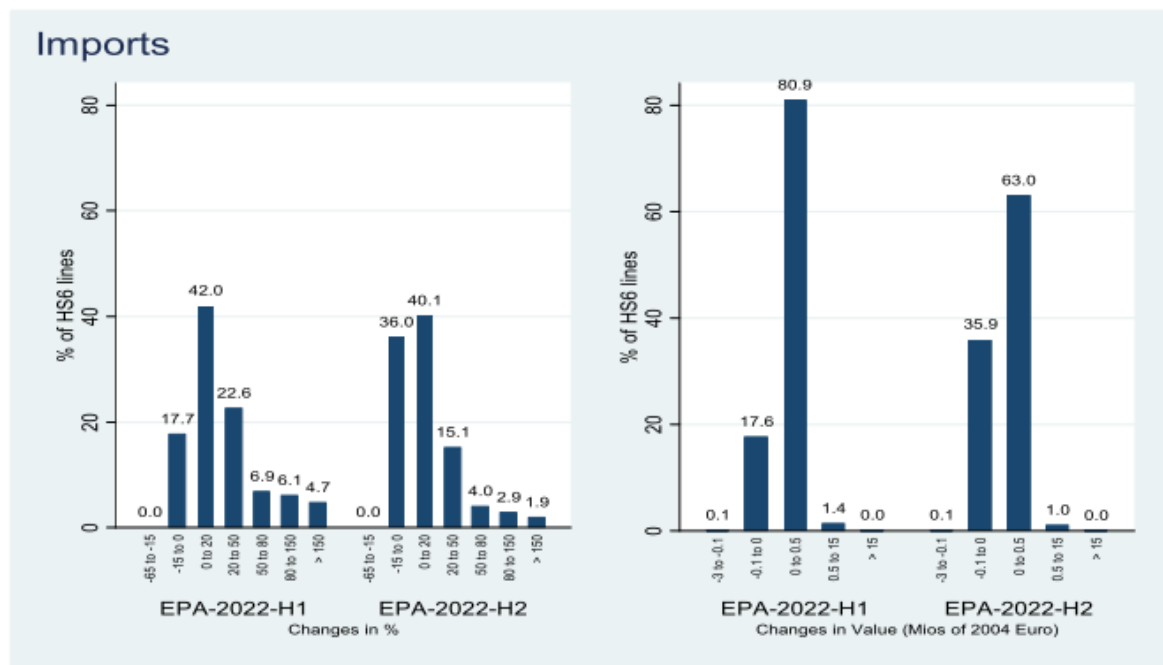


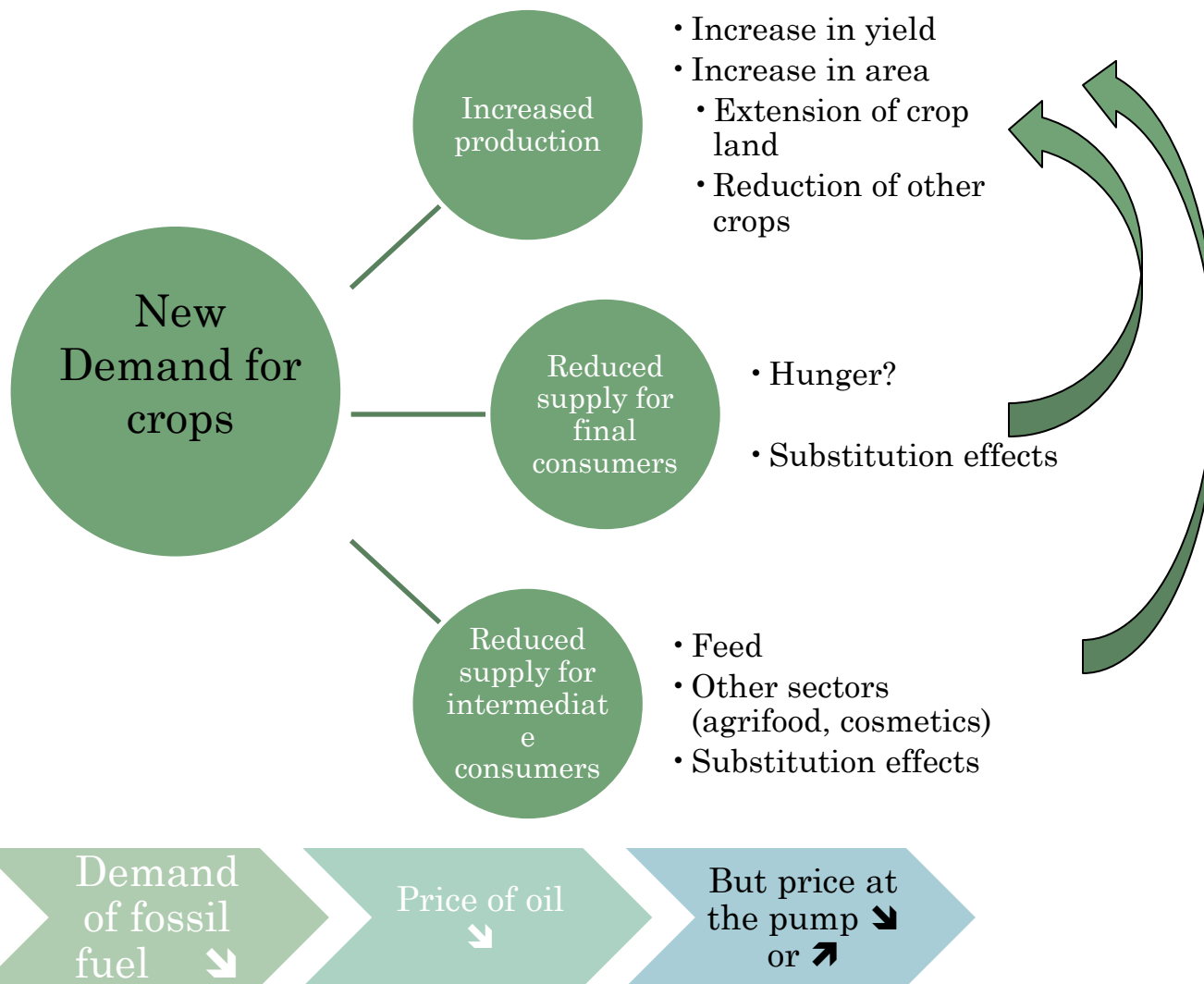
Table 7: Tariff revenue losses under different scenarios

Regions	Losses in Value (Mios of 2004 Euro)				Losses in %			
	Direct Effect		Trade Diversion Effect		EPA-2022-H1		EPA-2022-H2	
	EPA-2022-H1	Full FTA	EPA-2022-H1	Full FTA	EU products	All origins	EU products	All origins
All ACP	1390	1970	467	569	-71	-25	-52	-19
ECOWAS	530	648	172	178	-82	-38	-57	-27
CEMAC+	246	345	27	32	-71	-41	-53	-30
COMESA	297	478	128	160	-62	-21	-47	-16
SADC	91	157	49	51	-58	-22	-37	-16
CARIFORUM	226	337	84	137	-67	-16	-58	-13
Pacific	0	5	7	11	-1	-9	-2	-9

Source: Simulations results.

# ILLUSTRATION ON BIOFUELS POLICIES: WHY WE NEED A GE (LABORDE 2012)

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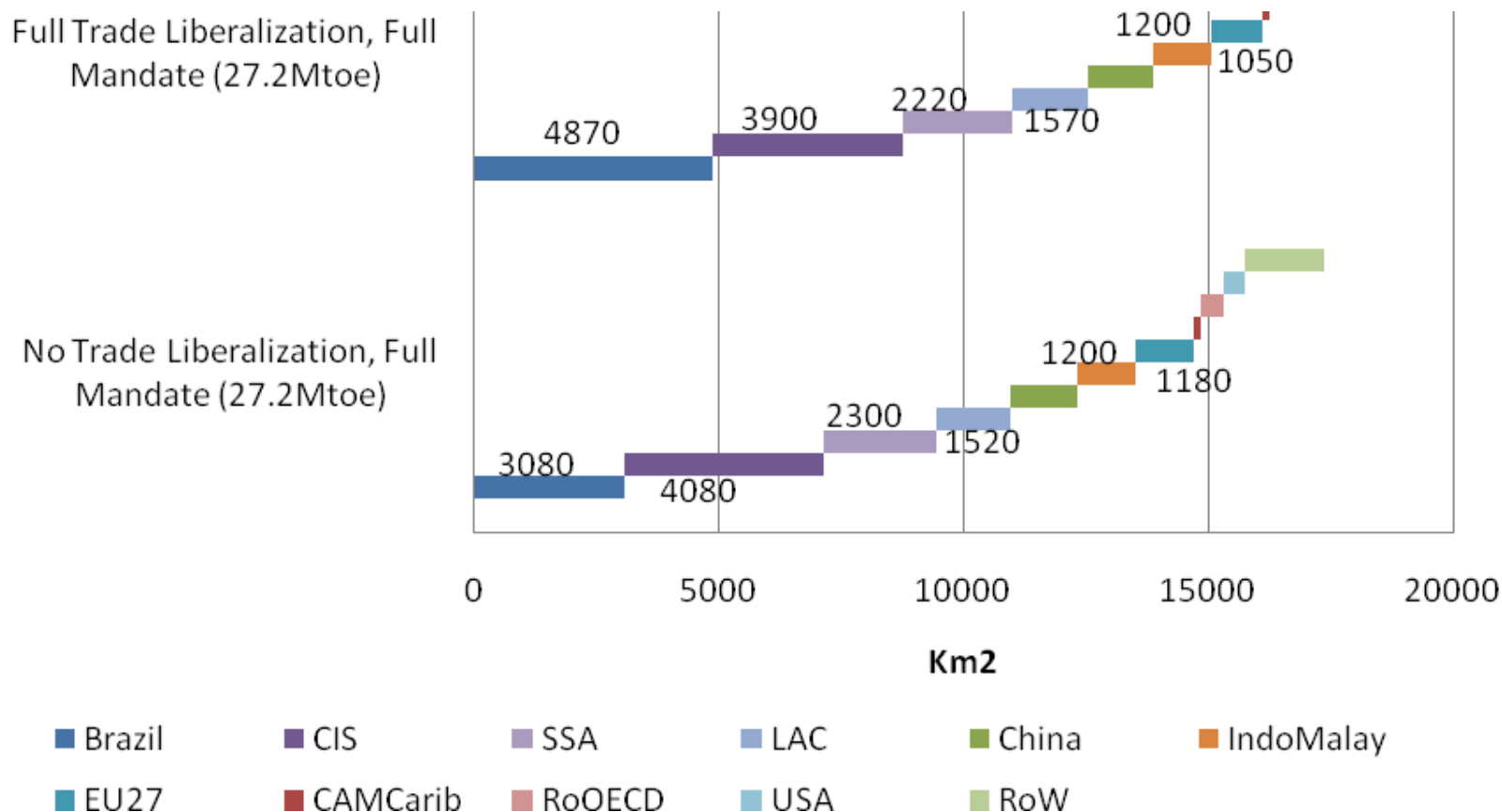


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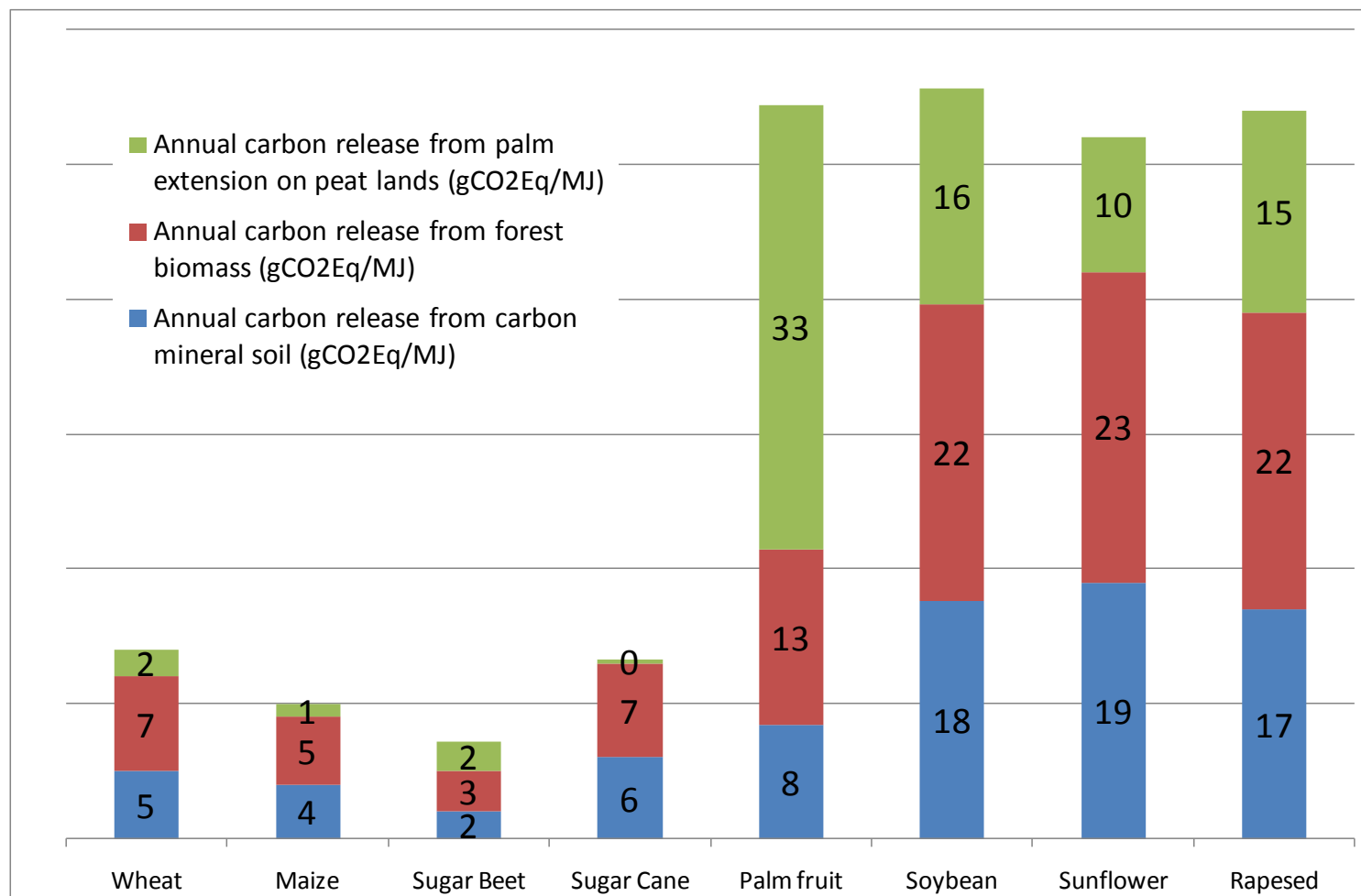
# SECTORAL DISAGGREGATION (43)

Sector	Description	Sector	Description	Sector	Description
Rice	Rice	SoybnOil	Soy Oil	EthanolW	Ethanol - Wheat
Wheat	Wheat	SunOil	Sunflower Oil	Biodiesel	Biodiesel
Maize	Maize	OthFood	Other Food sectors	Manuf	Other Manufacturing activities
PalmFruit	Palm Fruit	MeatDairy	Meat and Dairy products	WoodPaper	Wood and Paper
Rapeseed	Rapeseed	Sugar	Sugar	Fuel	Fuel
Soybeans	Soybeans	Forestry	Forestry	PetrNoFuel	Petroleum products, except fuel
Sunflower	Sunflower	Fishing	Fishing	Fertiliz	Fertilizers
OthOilSds	Other oilseeds	Coal	Coal	ElecGas	Electricity and Gas
VegFruits	Vegetable & Fruits	Oil	Oil	Construction	Construction
OthCrop	Other crops	Gas	Gas	PrivServ	Private services
Sugar_cb	Sugar beet or cane	OthMin	Other minerals	RoadTrans	Road Transportation
Cattle	Cattle	Ethanol	Ethanol - Main sector	AirSeaTran	Air & Sea transportation
OthAnim	Other animals (inc. hogs and poultry)	EthanolC	Ethanol - Sugar Cane	PubServ	Public services
PalmOil	Palm Oil	EthanolB	Ethanol - Sugar Beet		
RpSdOil	Rapeseed Oil	EthanolM	Ethanol - Maize		

## (FIGURE 6) LOCATION OF CROPLAND EXTENSION. CHANGES COMPARED TO THE BASELINE. KM2



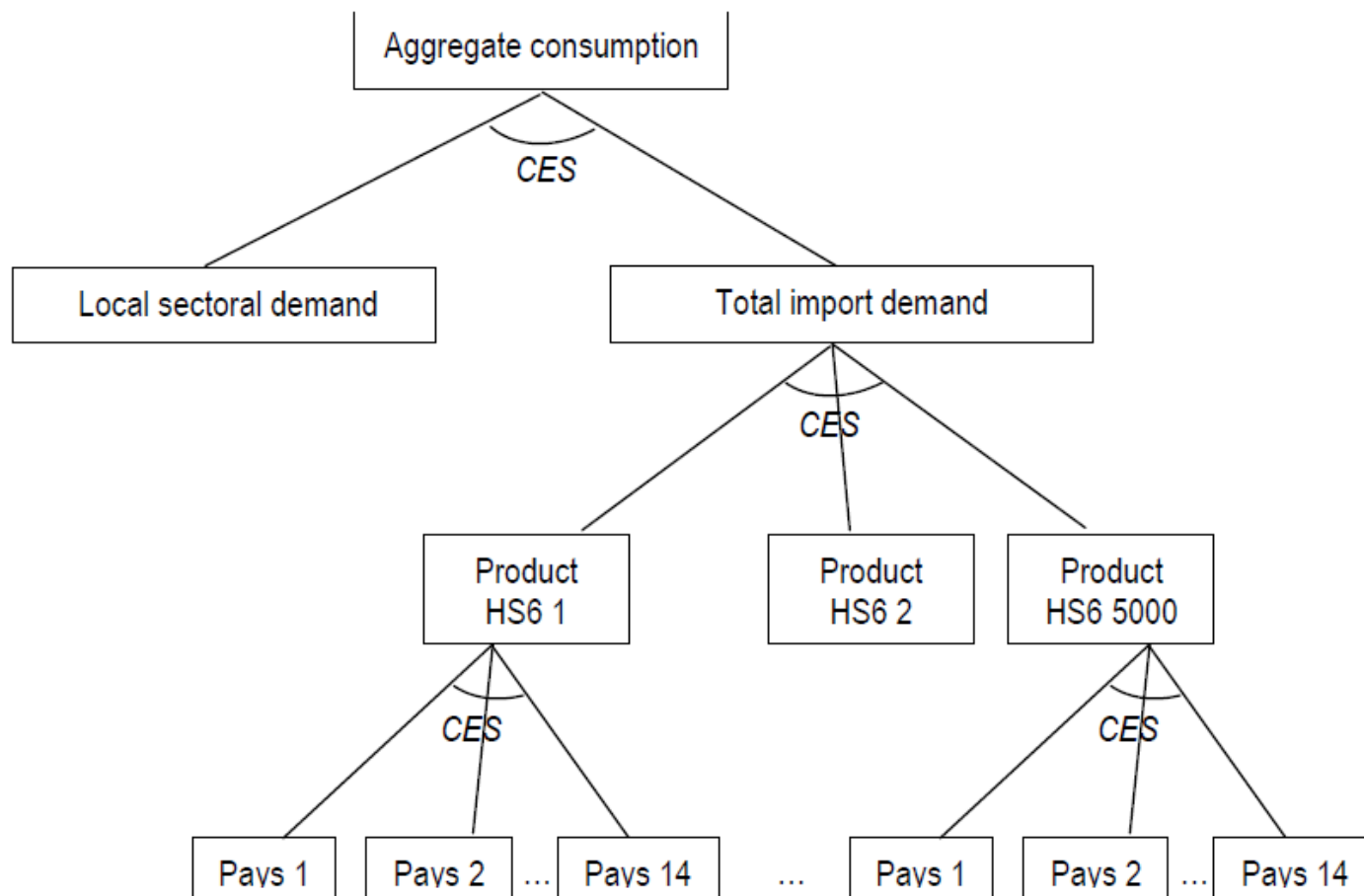
# (FIGURE 14) CROP SPECIFIC LUC. SOURCE OF EMISSIONS



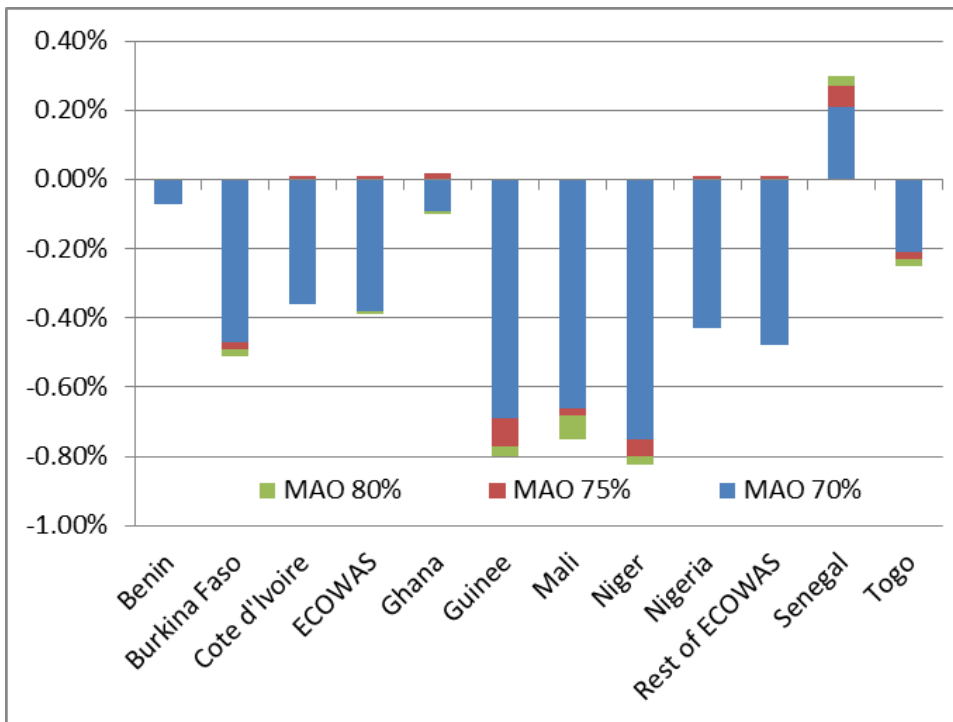
# A REGIONAL CGE FOR THE ECOWAS-EU EPA

- Development started in 2007
- Support EU-ECOWAS negotiations
- HS6 modelling was needed for:
  - Better capture the trade deviation effect
  - Better analyze tariff line classifications

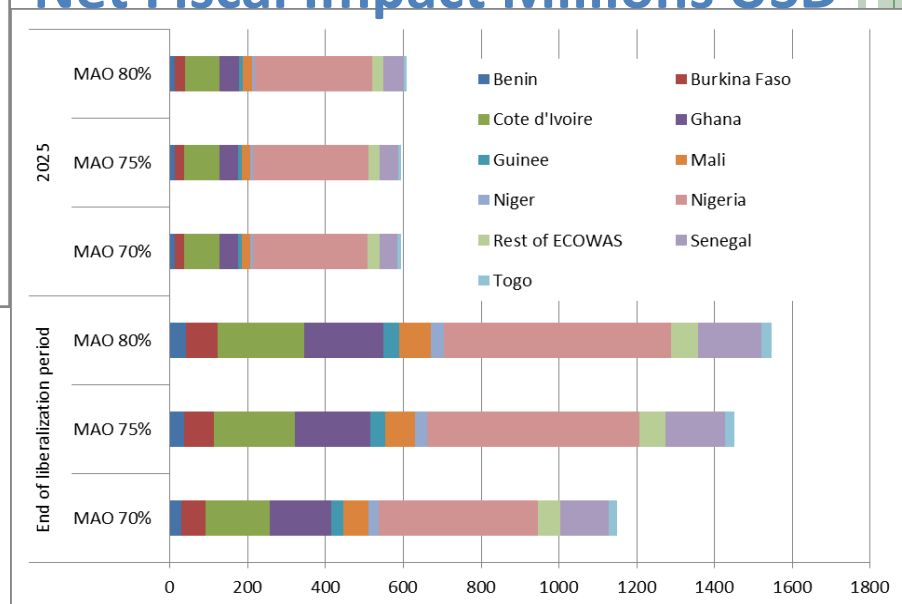
# MODELING TRADE FLOWS: EXAMPLE ON IMPORTS



## Impacts on real Consumption



## Net Fiscal Impact Millions USD





# AND STILL HS6 RESULTS

Trade flows, FOB, Value, Mios USD. Different Scenarios, GSP baseline

HS6/SH6	Flows/Flux	Country/Pa ys	2004 Baseline	2040 Baseline	2040 EPA MARKET ACCESS	2040 EPA MARKET ACCESS + Fiscal Neutralization	2040 EPA MARKET ACCESS + EPADP	2040 EPADP	2040 EPA MARKET ACCESS + Fiscal Neutralization +EPADP
100640	toEU	SEN	0.006	0.014	0.014	0.014	0.015	0.015	0.015
100640	toEU	ECOWAS	0.006	0.014	0.014	0.014	0.015	0.015	0.015
100640	toECOWAS	BEN	0.251	0.716	0.708	0.712	0.736	0.745	0.74
100640	toECOWAS	BUR	0.105	0.362	0.355	0.358	0.358	0.366	0.362
100640	toECOWAS	GUI	0.022	0.077	0.075	0.076	0.074	0.076	0.075
100640	toECOWAS	GHA	0.524	1.483	1.605	1.623	1.789	1.655	1.806
100640	toECOWAS	MAL	0.083	0.372	0.37	0.371	0.368	0.369	0.368
100640	toECOWAS	NGA	0.063	0.155	0.157	0.163	0.195	0.192	0.195
100640	toECOWAS	NG	0	0.001	0.001	0.001	0.001	0.001	0.001
100640	toECOWAS	SEN	7.387	20.647	20.431	20.459	20.64	20.837	20.67
100640	toECOWAS	TOG	0.129	0.384	0.379	0.382	0.408	0.414	0.41
100640	toECOWAS	COT	0.449	1.26	1.306	1.315	1.306	1.259	1.32
100640	toECOWAS	AAFO	0.107	0.377	0.372	0.378	0.413	0.417	0.418
100640	toECOWAS	ECOWAS	9.121	25.836	25.76	25.837	26.288	26.331	26.364
100640	toWorld	BEN	0.252	0.719	0.711	0.715	0.739	0.748	0.743

# GENERAL REMARKS ON THE DISAGGREGATING ISSUE

- Broadly Right vs Precisely Wrong
  
- Dealing with 0: the end of the CES.
  - See Gohin and Laborde 2006, HS6 trade modeling and NQES

## GENERAL REMARKS ON THE DISAGGREGATING ISSUE

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## REMARKS ON SERVICES

# PROBLEMS OF MEASUREMENT

- Heterogeneity of the sectors
- Lack of data on bilateral trade in services
  - Role of different modes
  - Efforts needs for African Countries: bilateral information needed to study regional integration!
- Lack of data on barriers to trade
  - Difficulty to quantify what exists
    - Index measure: see Matoo and al. World Bank
    - Gravity approach: see Fontagne and Mitaritonna. CEPII.
    - Price gap. OECD
  - Difficulty to simulate barriers reduction: what magnitude (see Francois and al for recent efforts)

- You CAN/SHOULD NOT model the liberalization of a sector if this sector is poorly modeled.
  - Would you trust a model on agricultural liberalization that does not have land as a production factor?
  - Services are heterogeneous activities with different economic impacts on other sectors
    - Different level of competition
    - Typology of sectors (health <> transportation <> banking)

## CAVEATS OF USING AVE FROM GRAVITY EQUATIONS

- Many cases, disputable data, and misspecifications (NTBs and market structure: impact on trade flows)
- An AVE is not an economic mechanism!
  - Liberalization of services may be about changes in market structure
  - Fixed cost effects (regulation)
  - FDI!
- If you use AVE:
  - Who gets the rents: critical redistribution issue between and among countries (e.g. Import distortion or export side distortion).
  - Be consistent in terms of elasticities