AGRODEP Modeling Component

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- At the end of 2012, the Modeling Component has developed/uploaded 9 models:
  - A Multi-country Multi-sector Dynamic CGE model
  - Two Single-Country Multi-sector CGE models
  - Three Partial Equilibrium models
  - Two econometric models
  - One Poverty Analysis model

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- End of 2012:
  - *Multi country, multi sector general equilibrium model (MIRAGRODEP)*
  - *IFPRI Single country, general equilibrium model*
  - *PEP Single country, general equilibrium model*
  - *Multi-market partial equilibrium model*
  - *Dynamic Partial equilibrium trade model with focus on the HS6 level*
  - *Econometric models of trade (gravity equation)*
  - *Poverty analysis: Top down approach for GE and PE*
  - *Stochastic Partial Equilibrium: Storage, and price stabilization*
  - *Supply and demand estimation models*

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- In 2013, first: focus on the completion of the documentation for the initial set of models.
- Second: development of 6 new analytical instruments to be uploaded
  - *Spatial Partial Equilibrium Model*
  - *Impact Assessment Tool Box*
  - *Endogenous Saving behavior in CGE*
  - *A GLOBIOM model for AGRODEP*
  - *Econometrics of price transmission*
  - *Regional Computable General Equilibrium Model*

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- Thank you for your attention!

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Illustrations

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Illustrative Study of *MIRAGRODEP*

(ex. From: Bouet and Laborde, 2011, Impact of DDA on LDCs)

Table 6.7: *Impact of the central scenario on macroeconomic variables (2025, scenario/baseline, in percent).*

Sector	Real income	Exports (volume)	Terms of trade	Unskilled real wages
High-income countries	0.13	3.12	—	—
Low-income countries	0.12	2.46	—	—
LDCs	−0.09	−0.49	—	—
LDCs: Asia	−0.66	−0.82	−0.35	−0.64
LDCs: Bangladesh	−0.14	−1.54	−0.38	−0.17
LDCs: Central and South Africa	−0.11	−0.16	−0.17	−0.01
LDCs: East Africa	−0.03	−0.32	−0.05	−0.02
LDCs: Malawi	−0.24	−1.12	−0.34	−0.18
LDCs: Senegal	0.07	0.03	0.04	0.32
West Africa (mix)	−0.08	−0.01	0.09	0.01
Central Africa (mix)	0.13	0.66	−0.09	−0.23
Rest of sub-Saharan Africa (non-LDCs)	0.02	−0.10	0.04	0.12

Source: authors' calculation using the MIRAGE model.

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Illustrative Study of *IFPRI model* (ex. From: Fousseini and Laborde, 2012, Impact of 50% cut in Import Duties on Nigeria's GDP)

	SIM1	SIM2	SIM3	SIM4
GDP	2.25%	1.95%	1.66%	2.78%

- SIM1/ SIM2/ SIM3 /SIM4 correspond to different assumptions on
  - Intersectoral factor mobility
  - Savings-Investment hypothesis
  - Government closure
  - External account closure

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Illustrative Study of *Multi-sector PE model*
(ex. From: Bouet, Estrades and Laborde, 2012, Impact of Differential Export taxes on production along the value chain)

Table 5 Impact of export tax elimination in Argentina, Indonesia and Ukraine on production, percentage change – Scenario S1

		Argentina	US	Indonesia	EU	Ukraine
Seeds	Soy	8.9	-1	-1	-0.7	-1
Seeds	Sunflower	3.9	-0.7		-0.5	2.7
Seeds	Rape	-0.1	-0.2		-0.2	-0.2
Seeds	Palm			8		
Meals	Soy	4.1	0.0	1.2	0.0	1.8
Meals	Sunflower	5.1	0.0	0.1	-0.2	-0.8
Meals	Rape	-0.1	-0.1		-0.1	-0.1
Meals	Palm			-0.1		
Oils	Soy	4.1	0	1.2	0	1.8
Oils	Sunflower	5.1	0	0.1	-0.2	-0.8
Oils	Rape	-0.1	-0.1		-0.1	-0.1
Oils	Palm			-0.1		
	Biodiesel	-0.4	0.9	-1.1	0.0	

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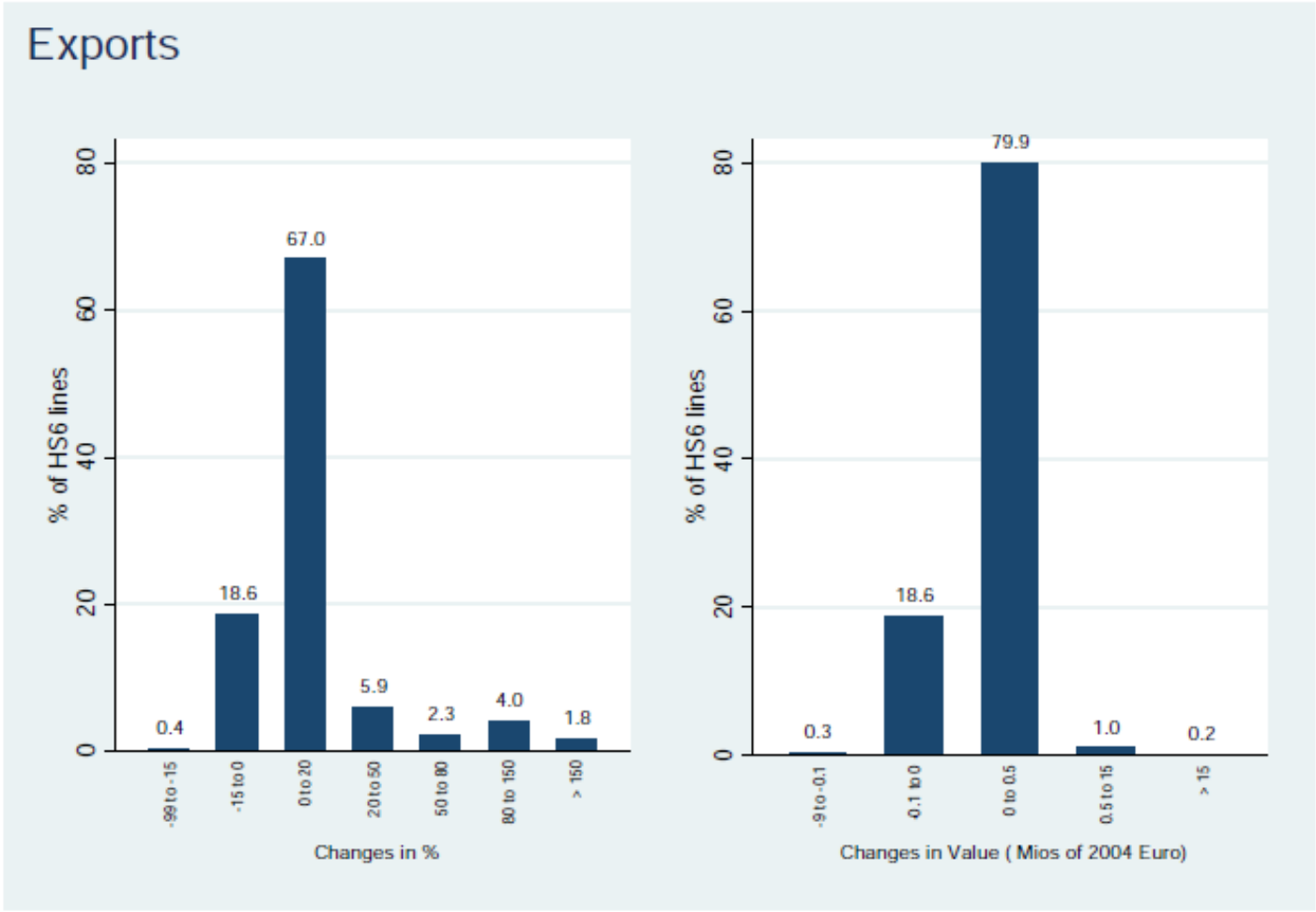
1. ILLUSTRATIVE STUDY OF *DYNAMIC HS6 PE MODEL*
(EX. FROM: FONTAGNE, MITARITONNA AND LABORDE, 2008, IMPACT OF EPAS ON ACP COUNTRIES' TRADE)



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- Illustrative Study of a Gravity Equation
- (Extr. From Bora, Bouet and Roy, 2007)

Table 4 – Gravity model results for Africa's export status, with and without controlling for infrastructure, 2001 and 2004

	2001		2004	
Log linear specification, 2001 (variable)	No accounting for infrastructure (1)	Accounting for infrastructure (2)	No accounting for infrastructure (3)	Accounting for infrastructure (4)
GDP importer	0.96***	0.96***	0.90***	0.90***
	(78.09)	(78.37)	(39.55)	(40.17)
GDP exporter	1.10***	1.08***	1.18***	1.15***
	(97.16)	(83.08)	(61.96)	(57.19)
Bilateral distance	−1.49***	−1.49***	−1.49***	−1.49***
	(−40.93)	(−40.83)	(−24.72)	(−24.95)
Distance of exporter from rest of the world	0.81***	1.27***	1.29***	2.02***
	(6.61)	(8.04)	(6.58)	(8.81)
Distance of importer from rest of the world	0.59***	0.58***	−0.13	−0.17
	(4.75)	(4.68)	(−0.64)	(−0.84)
Bilateral tariff	0.06	0.03	−0.32***	−0.38***
	(1.20)	(0.72)	(−3.50)	(−4.12)
Relative import protection	0.05	0.03	0.07	0.07
	(1.45)	(1.05)	(1.35)	(1.25)
Relative export protection	−0.12***	−0.1**	0.31***	0.36***
	(−2.77)	(−2.10)	(4.06)	(4.64)
Nontariff barriers	−0.04**	−0.05**	−0.03	−0.04
	(−2.14)	(−2.20)	(−0.81)	(−1.14)
Landlocked exporter	−0.11*	−0.09	−0.20**	−0.02
	(−1.72)	(−1.37)	(−1.97)	(−0.19)
Landlocked importer	−0.51***	−0.51***	−0.53***	−0.54***
	(−7.88)	(−7.94)	(−4.48)	(−4.59)
Colonial linkage	0.63***	0.63***	−0.36	−0.37
	(4.49)	(4.34)	(−0.98)	(−0.99)
Contiguity	0.92***	1.00***	0.81***	0.84***
	(6.79)	(7.30)	(3.46)	(3.63)
Common language	0.72***	0.70***	0.94***	0.91***
	(10.20)	(9.71)	(7.74)	(7.48)
Aircraft departures		0.01		−0.10***
		(0.44)		(−3.00)
Cell phone density		0.02		0.12***
		(1.07)		(3.10)
Road length per unit of population		0.08***		0.16***
		(2.75)		(4.42)
Share of paved roads		0.17***		0.07
		(4.37)		(1.15)
African exporter	−0.35***	−0.09	−0.27**	0.02
	(−5.08)	(−1.15)	(−2.29)	(0.20)
Number of observations	6,208	6,208	3,086	3,086
R^2	0.73	0.74	0.67	0.68

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ILLUSTRATIVE STUDY OF *POVERTY ANALYSIS* (EX. FROM: ESTRADES, 2012, IMPACT OF 50% FALL IN EXPORT PRICES ON TANZANIA)

Table 1. Comparison of results obtained with each method with full employment

	Non-parametric microsimulation			Micro-accounting method		
Indicator	Benchmark	Simulation results	Percentage variation	Benchmark	Simulation results	Percentage variation
Poverty	42.1%	43.9%	4.3	42.1%	45.1%	7.1
Extreme poverty	29.6%	31.4%	5.7	30.5%	33.0%	8.2
Inequality (Gini index)	0.5808	0.5869	1.1	0.6057	0.6127	1.2

Table 1. Comparison of results obtained with each method with unemployment

	Non-parametric microsimulation			Micro-accounting method		
Indicator	Benchmark	Simulation results	Percentage variation	Benchmark	Simulation results	Percentage variation
Poverty	42.1%	45.0%	6.9	42.1%	44.2%	4.8
Extreme poverty	29.6%	32.3%	9.2	30.5%	32.1%	5.3
Inequality (Gini index)	0.5808	0.5886	1.4	0.6057	0.6103	0.8

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Illustrative Study of *Spatial PE Model* (ex. From: Bouet, Gruere and Leroy, 2012, Impact of Biosafety Protocol on Trade in Maize)

Table 6. Changes in maize and soybeans export volumes (metric tons) relative to the Base under different scenarios

	Group 1	Group 2	Group 3	Group 4	Total
Maize					
A	-718,557	162,866	84,097	3,162	-468,433
B	-3,611,490	685,926	285,293	12,889	-2,627,381
C	-7,017,858	1,497,366	734,081	28,705	-4,757,705

- A, B and C are different scenarios concerning the change in transportation costs associated with the adoption of the protocol.
- Groups 1/2/3/4 are groups of countries distinctive in terms of implementation or not of the protocol and production or not of GM Maize.

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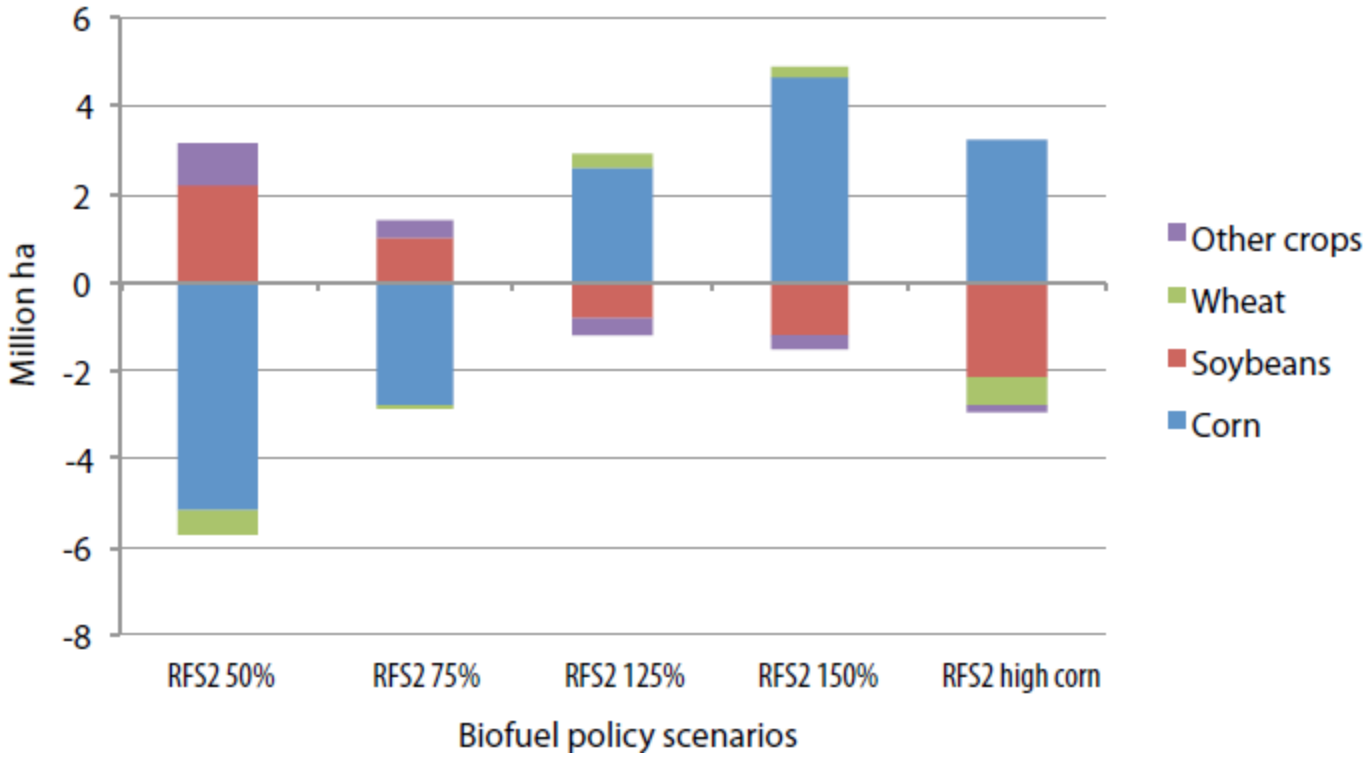
Illustrative Study of *the Globiom Model* (ex. From: Mosnier, Havlik Valin, et al., 2012)

Figure 7. Absolute area change by crop relative to the RFS2 baseline in 2020 in the U.S.



- RFS2 x%= Renewable Fuel Standard = different US biofuel policies

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Illustrative Study of *The Impact Evaluation Toolbox* (ex. From: Bernard and Torero, 2012)

- Experimental Evidence from a Rural Electrification Program in Ethiopia: importance of bandwagon effects

Table 6.2—Bandwagon effects : Twelve-month estimates

	(1) 10-meter radius	(2) 30-meter radius	(3) 50-meter radius	(4) 100-meter radius	(5) 200-meter radius	(6) 300-meter radius	(7) 400-meter radius	(8) 500-meter radius
	Panel 1. Dependent variable. Household has connected over the course of the study Ordinary least squares (OLS) estimates							
Proportion of connected neighbors within radius	0.369 (0.112)***	0.138 (0.123)	0.128 (0.124)	0.185 (0.131)	0.195 (0.128)	0.205 (0.128)	0.209 (0.128)	0.210 (0.128)
	Panel 2. First stage. Dependent variable. Number of connected neighbors within radius OLS estimates							
# voucher recipients within radius	0.296 (0.023)***	0.065 (0.003)***	0.030 (0.001)***	0.017 (0.000)***	0.015 (0.000)***	0.014 (0.000)***	0.012 (0.000)***	0.010 (0.000)***

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ILLUSTRATIVE STUDY OF *THE STOCHASTIC STORAGE PE MODEL* (EX. FROM: LARSON, LAMPIETTI, GOUEL ET AL., 2012)

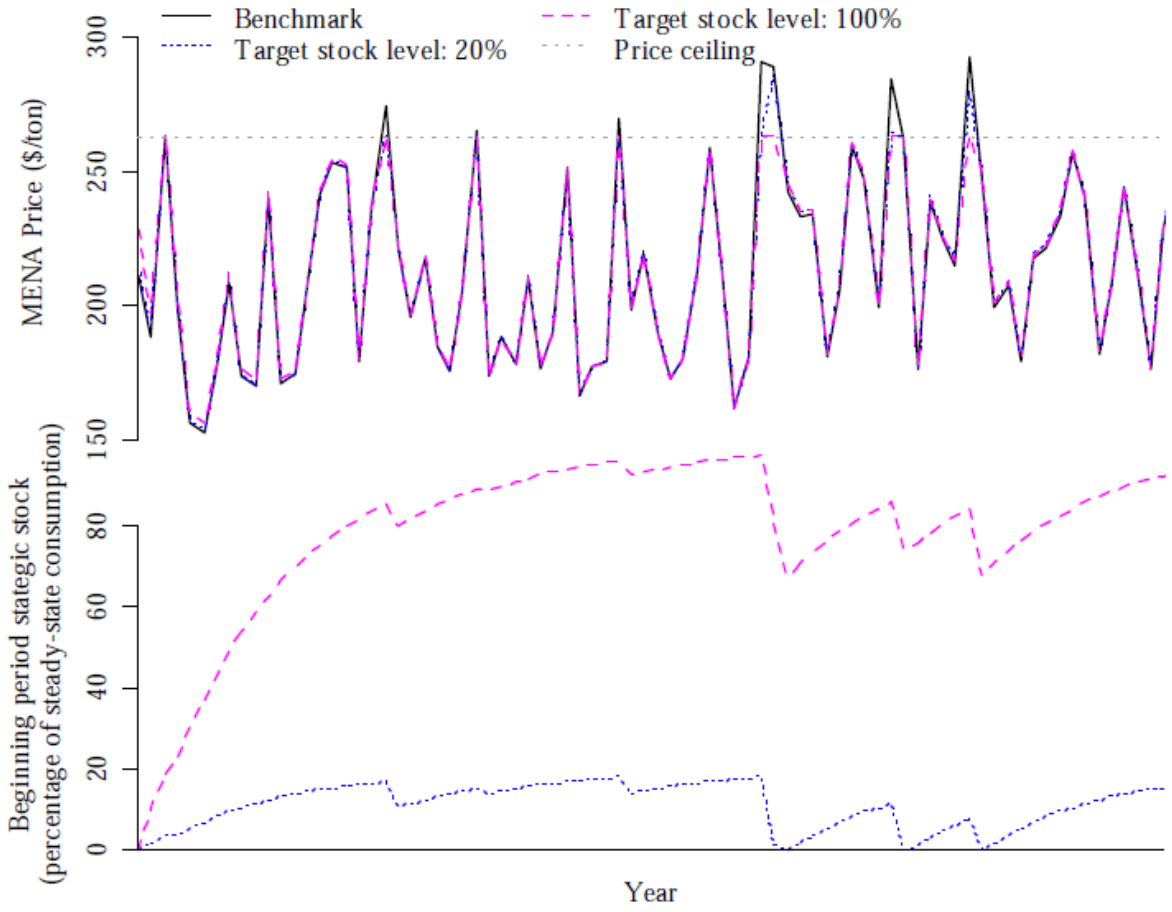

Figure 4: Sample simulation of price and strategic stock level in MENA. The simulations start from the non-stochastic steady state, correspond to the same production shocks and are generated under the assumption of a 10 percent build-up rate.