Trade openness and investment in North Africa

A CGE application to deep and comprehensive free trade areas (DCFTAs) between the EU and respectively Egypt, Morocco and Tunisia

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Rationale

- Beyond the Barcelona Process (Association Agreements), the Arab Spring dynamic provides a unique opportunity to rethink economic relations between EU and North African (NAF) countries

- A new set of analytical analyses is required in order to contribute to the design of thriving DCFTAs

- Consequent project by JRC-IPTS: *Economic Growth in the Euro-Med Area through Trade Integration. Focus on Agriculture and Food.*

MAGNET model assumptions

- Global CGE model, built upon standard GTAP
- Extensions to standard GTAP in this study:
  - More elaborate production structure
  - Improved consumption structure
  - Endogenous land supply
  - Segmented labour and capital markets
- GTAP database v.8
- Outcomes are compared to a Business as Usual scenario incorporating GDP and population growth rates up to 2020

Scenario simulations overview

(i) Trade liberalisation scenario, with special attention in removing non-tariff measures (NTMs)

(ii) Broad public and private investment scenario which captures the effects of FDIs and capital flow increase in NAF countries

(iii) Targeting food waste scenario which focuses in the improvement of food chain efficiency. This scenario assumes an increase of total factor productivity aiming to reduce losses (waste) in North African countries' agricultural production, post-harvest handling and storage.

Trade Liberalisation (TL) scenario: set-up (1)

Scenario	Assumptions
S1: Tariff elimination	Elimination of the tariffs between countries as follows: • EU-27 – NAF • NAF – EU-27 • Intra-NAF trade
S2: Tariff elimination and reduction of NTMs	Tariff elimination as in S1 and reduction of NTMs

Trade Liberalisation (TL) scenario: set-up (2)

- Initial ad-valorem (%) import tariffs as in GTAPv8 database
- EU imposes the highest tariffs for imports of vegetable oils and fats and sugar
- NAF countries impose highest tariffs for imports from the EU of cereals and livestock products, imports of manufactured products are not duty free
- Intra-NAF imports mostly duty free (apart from imports of manufactured products into Morocco)

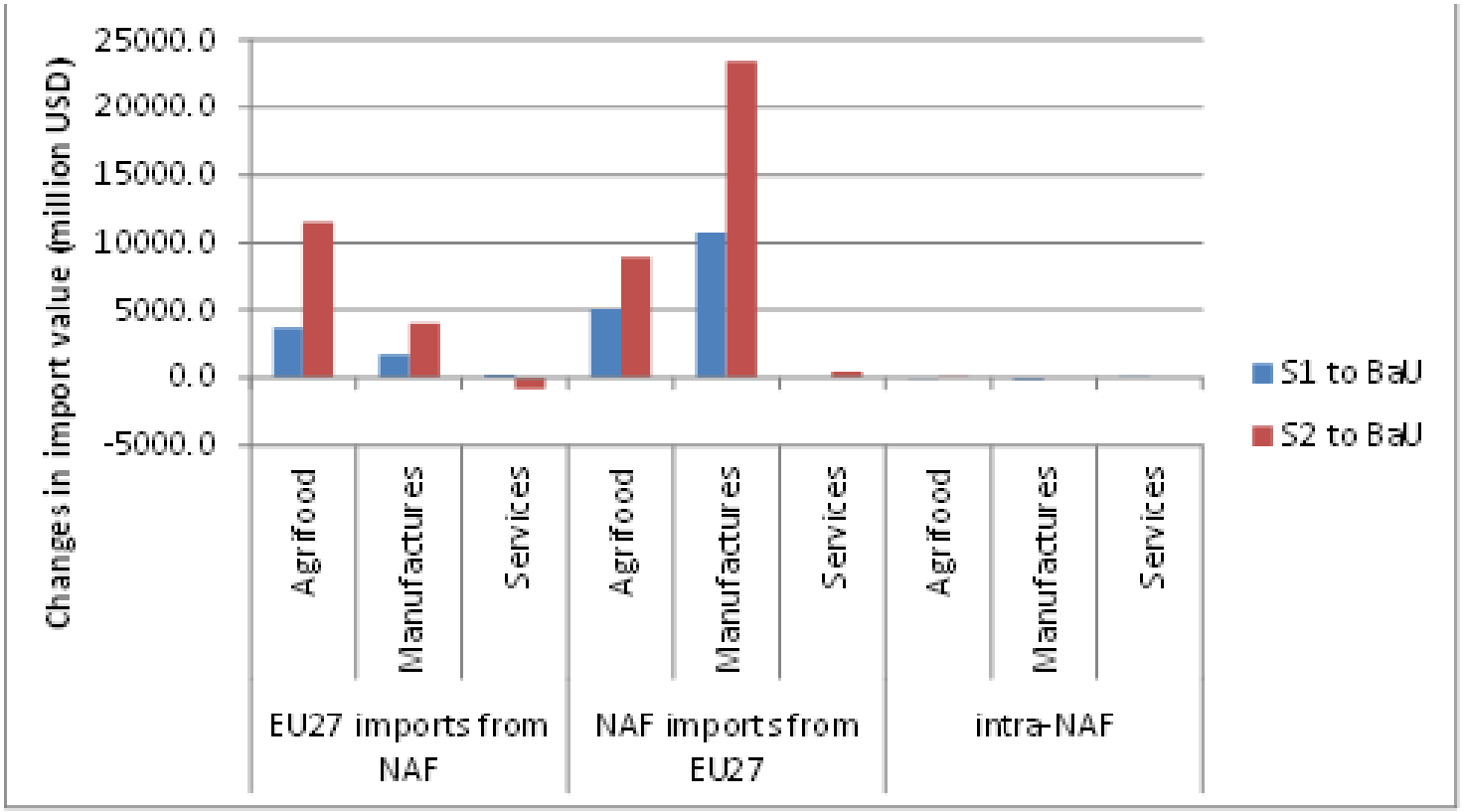
Trade Liberalisation (TL) scenario: set-up (3)

- Reduction of NTMs modelled as reduction of "iceberg costs"
- Reducing iceberg costs means lowering real trade costs and which in turn boosts efficiency (positive technological change)
- % ad valorem equivalents of NTMs by imposing country:

Importing country	Year of estimation	Agri-food products	Manufacturing products
Egypt	2009	14	8
Morocco	2009	39	4
Tunisia	2006	45	10
EU27 (extra-EU trade)	2009	27	2

Source: Kee et al. (2009)

TL scenario: effects on imports, 2020



TL scenario: effects on imports – products most affected

EU imports from NAF

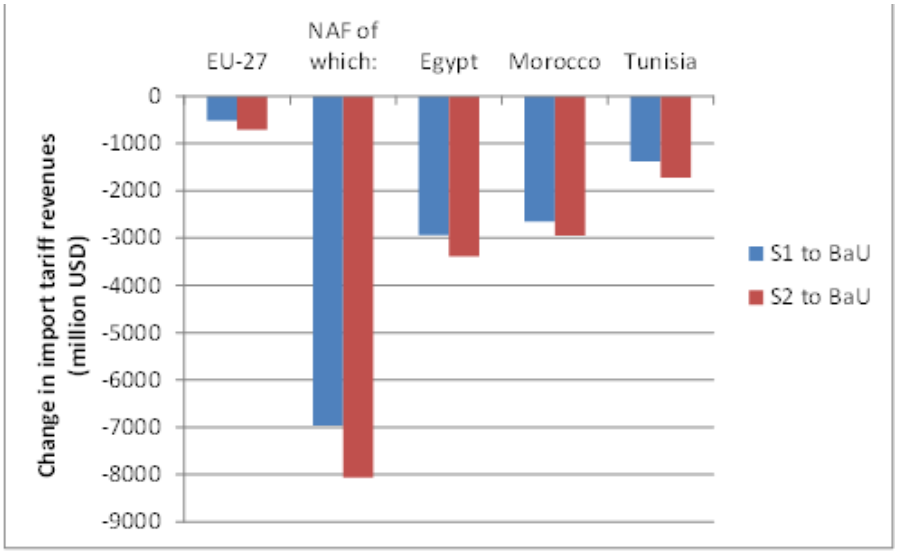
- Vegetable oil and fats: increase 2times under S1, 4times under S2

NAF imports from EU

- Food, beverages and tobacco: increase by 75% under S1, 100% under S2
- Wheat: increase more than 3times under S1, more than 5times under S2
- Beef, sheep and horse meat: the highest increase from US$ 9 million in BaU to US$ 609 million under S1 and US$ 1,121 million under S2

→ **NTMs are key elements to be addressed in DCFTAs**

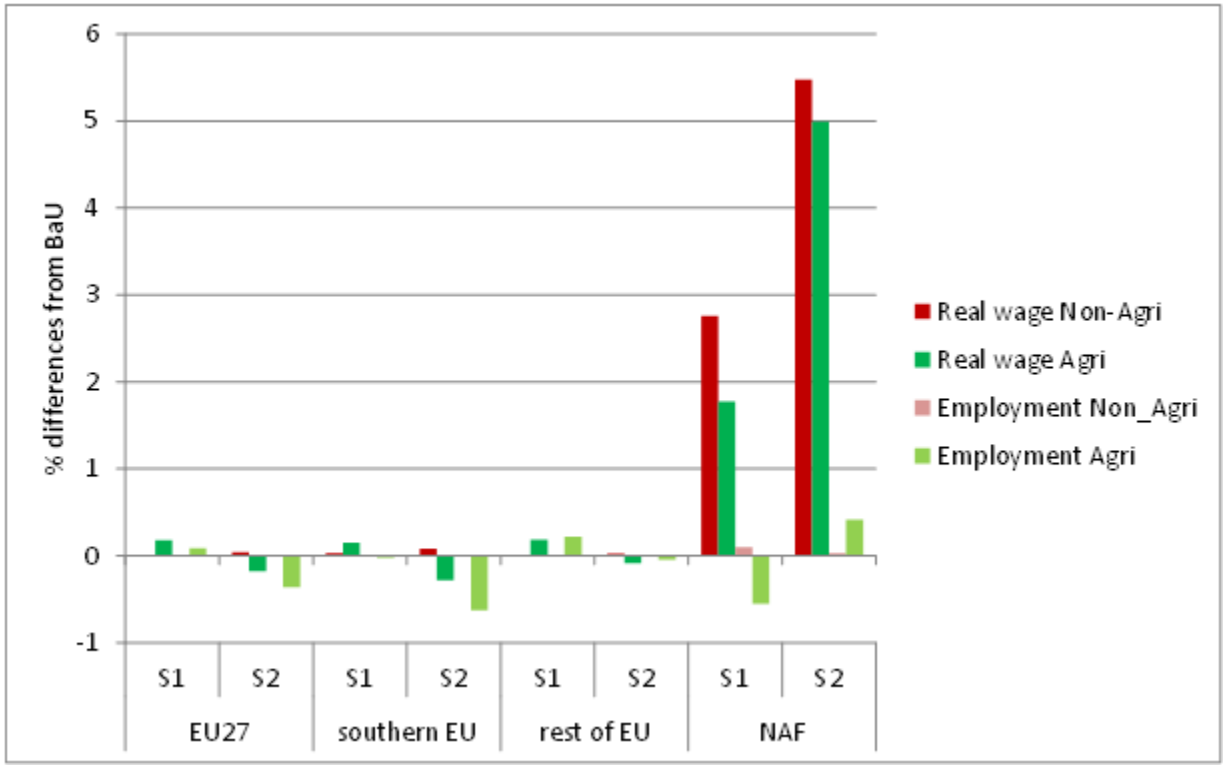
TL scenario: effects on tariff revenues , 2020



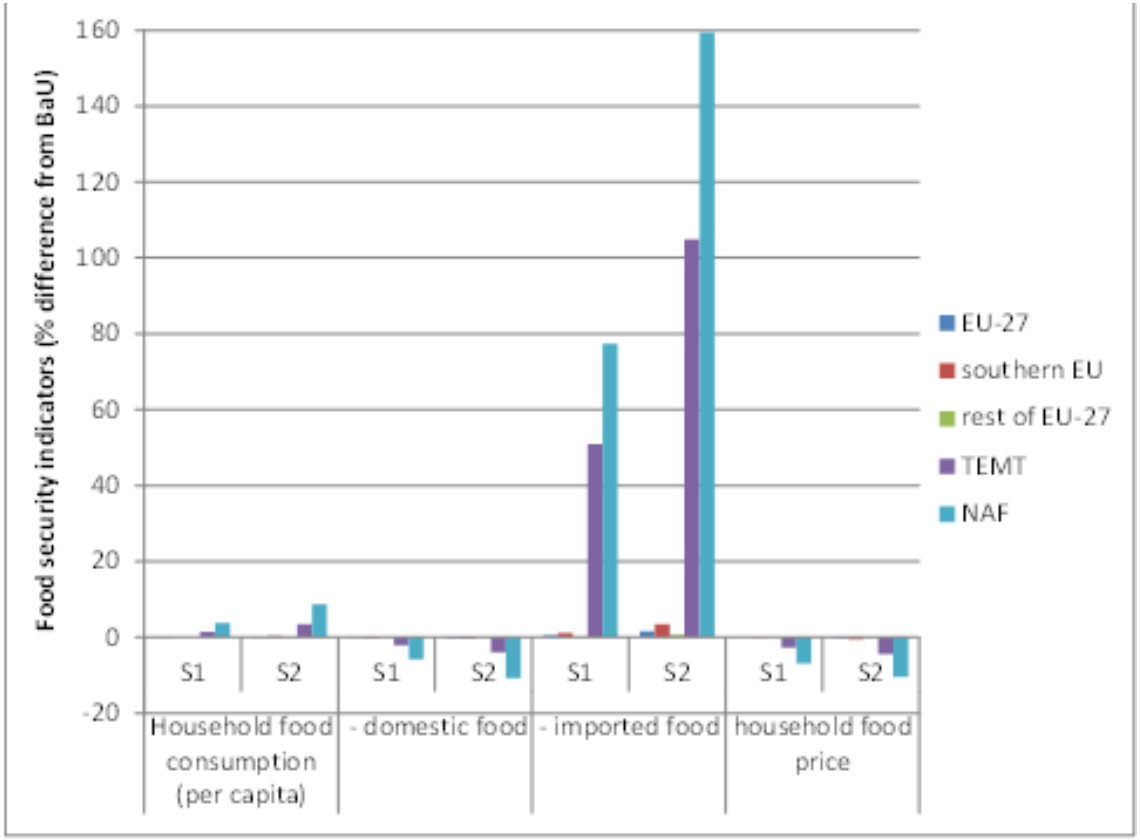
TL scenario: effects on GDP , 2020

	% difference from BaU	
	S1	S2
EU27	0.01	0.03
Southern EU	0.01	0.05
Rest of EU27	0.01	0.02
NAF	**0.64**	**2.73**

TL scenario: impacts on employment and real wages, 2020



TL scenario: impacts on food security indicators, 2020



NAF: North African Countries (Egypt, Morocco, Tunisia)
TEMT: Turkey, Egypt, Morocco, Tunisia

Broad productivity gain scenario (BI): set-up

Background

one objective of EU's DCFTAs: boost overall economic growth inter alia by increased foreign direct investment and capital flows

Construction

incorporate Total Factor Productivity (TFP) growth of 1.5% over 2012-2020

source: Cecchini and Lai-Tong (2008)

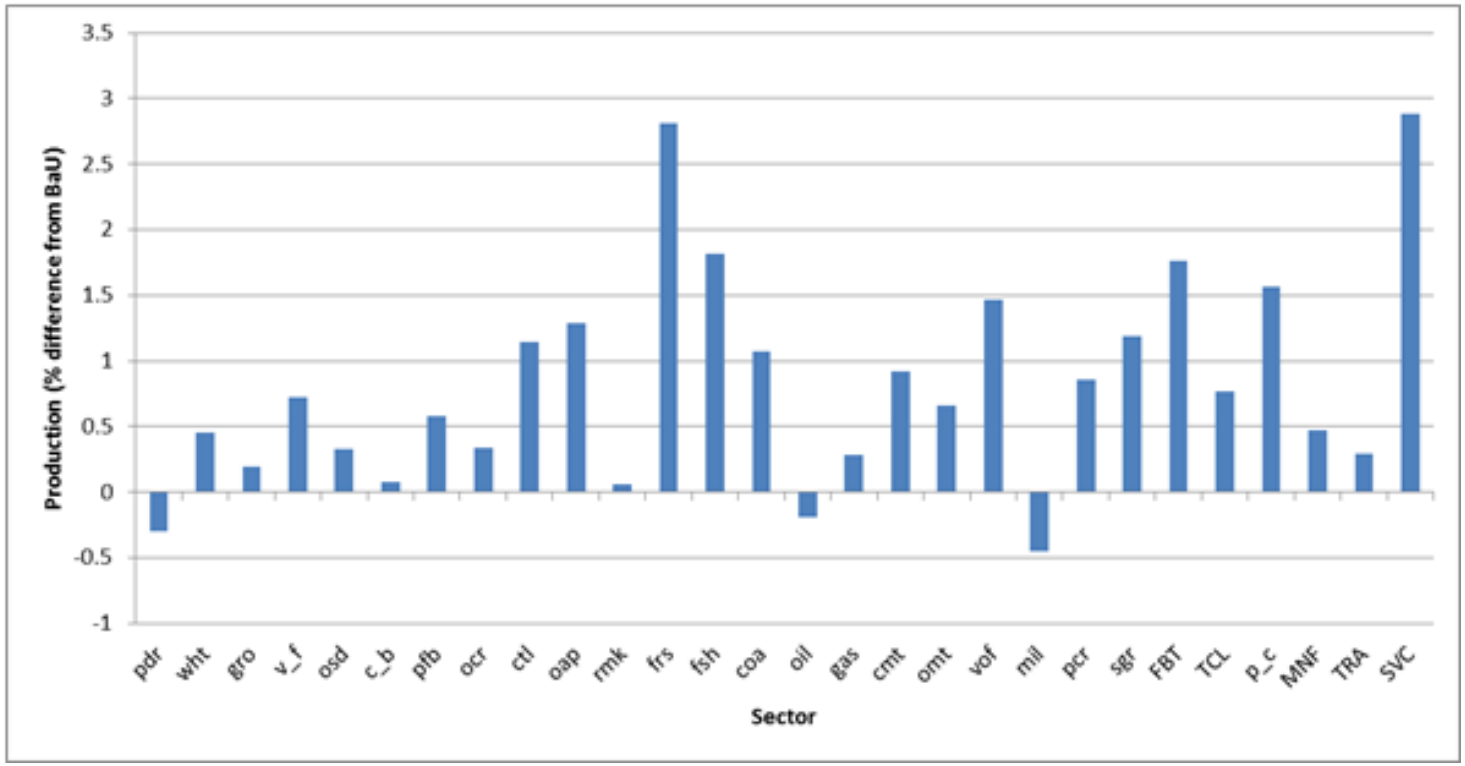
Analysis of results

in difference from BaU, in 2020

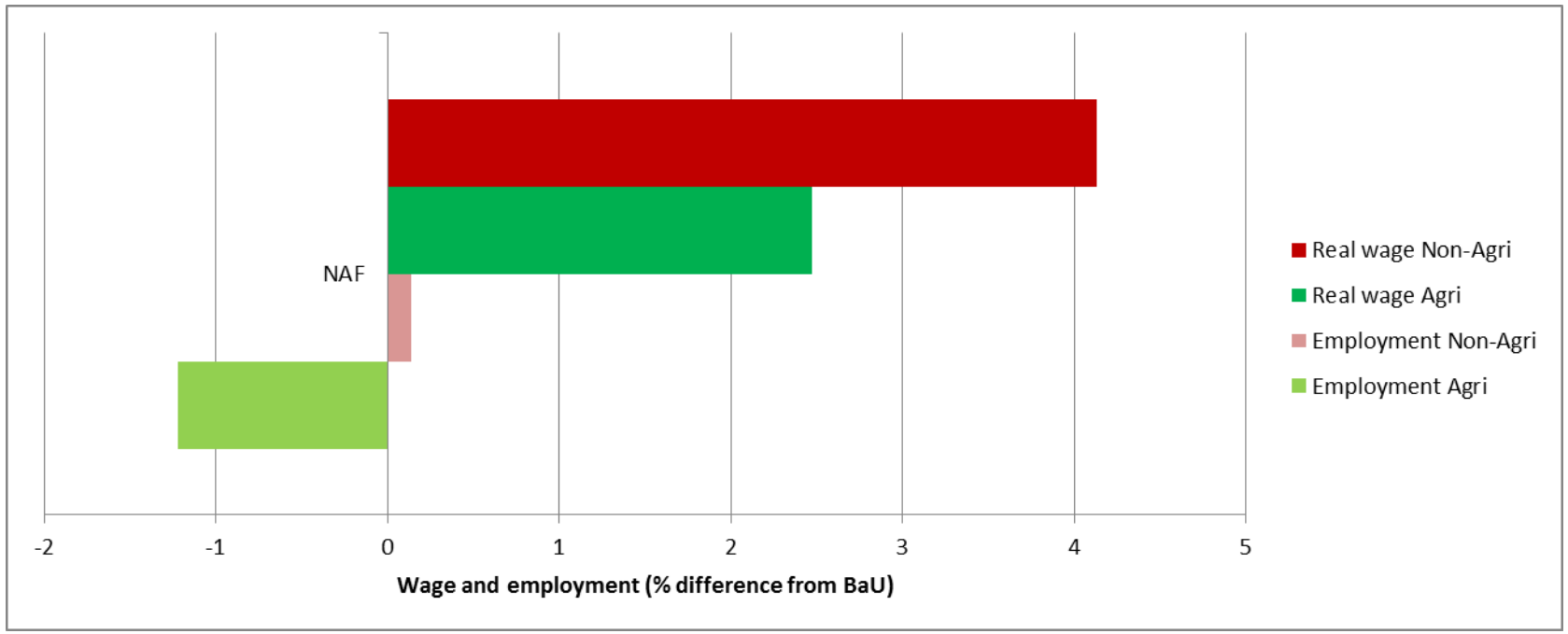
BI scenario: trade effects

- North African imports grow faster for non-agricultural commodities
- North African exports grow faster for agricultural commodities
- In total deterioration of North African countries' trade balance: higher growth fuels the need for industrial and services imports
- The results of this scenario strengthen the Business as Usual results

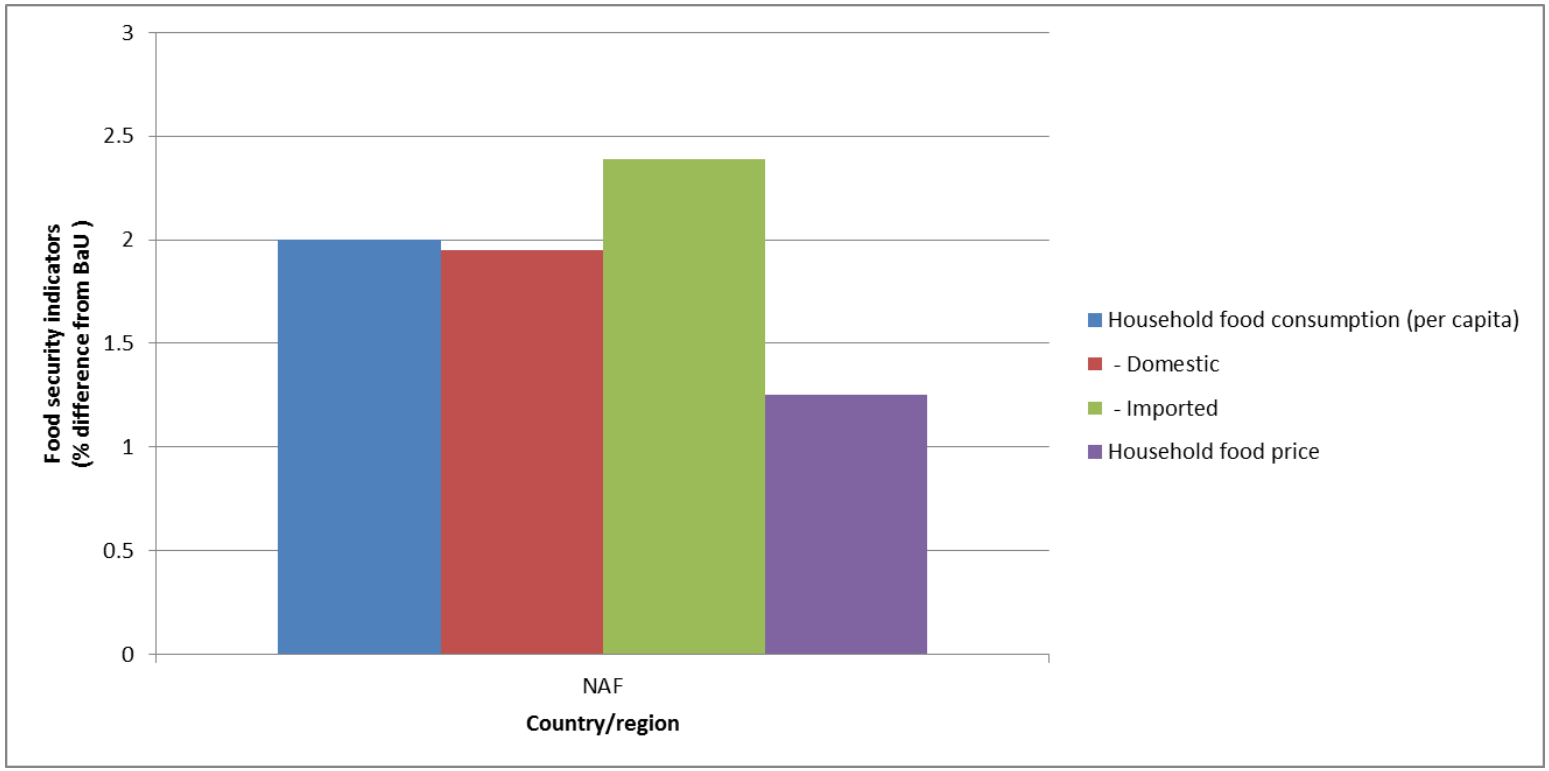
BI scenario: impacts on production, 2020



BI scenario: impacts on employment and real wages, 2020



BI scenario: impacts on food security indicators, 2020



Targeted productivity gain scenario (TI): set-up

Background

High losses in agricultural production and post-harvest handling and storage are a significant cause of concern in view of safeguarding food security

Construction

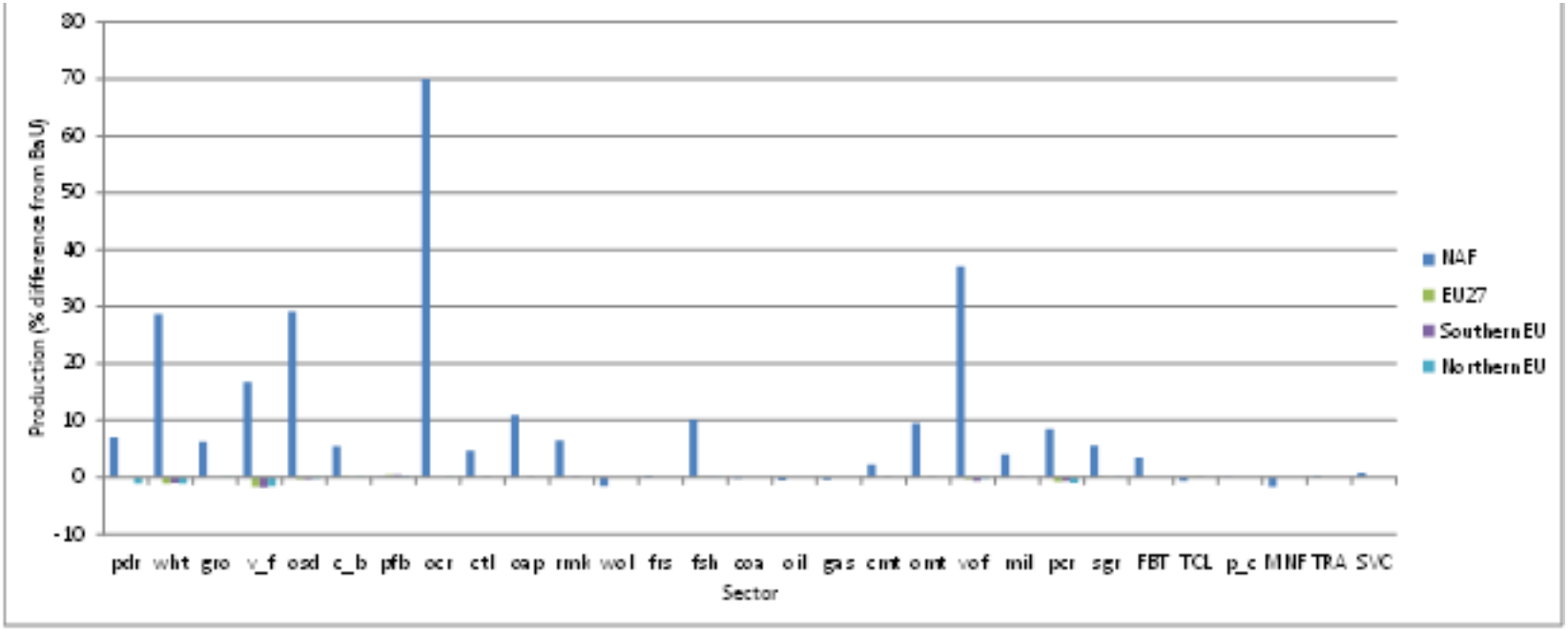
TFP growth targeting the losses (food waste) in the stages of agricultural production, post-harvest handling and storage. Derived from FAO (2011)

Sector	TFP growth	Sector	TFP growth
Paddy rice	14%	Other crops	30%
Wheat	14%	Cattle	7%
Other grains	14%	Other animal products	7%
Fruit and vegetables	30%	Fishing	12%
Oil seeds	24%	Raw milk	10%
Sugar cane, sugar beet	16%		

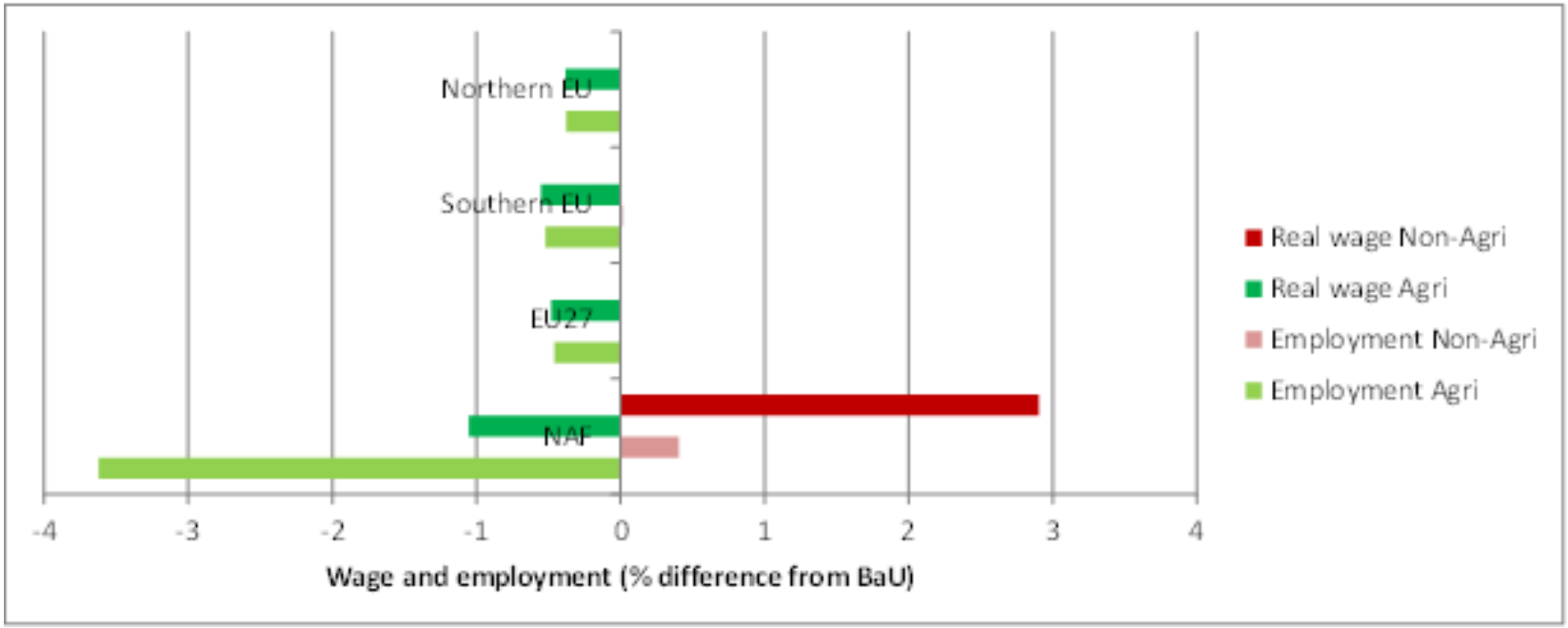
TI scenario: trade effects

- North African agri-food imports fall, whereas exports rise even more
- Improvement of North African countries' trade balance in agri-food commodities
- However the reverse is observed for other sectors and in particular manufacturing: imports rise and exports fall leading deteriorating the trade balance of North African countries

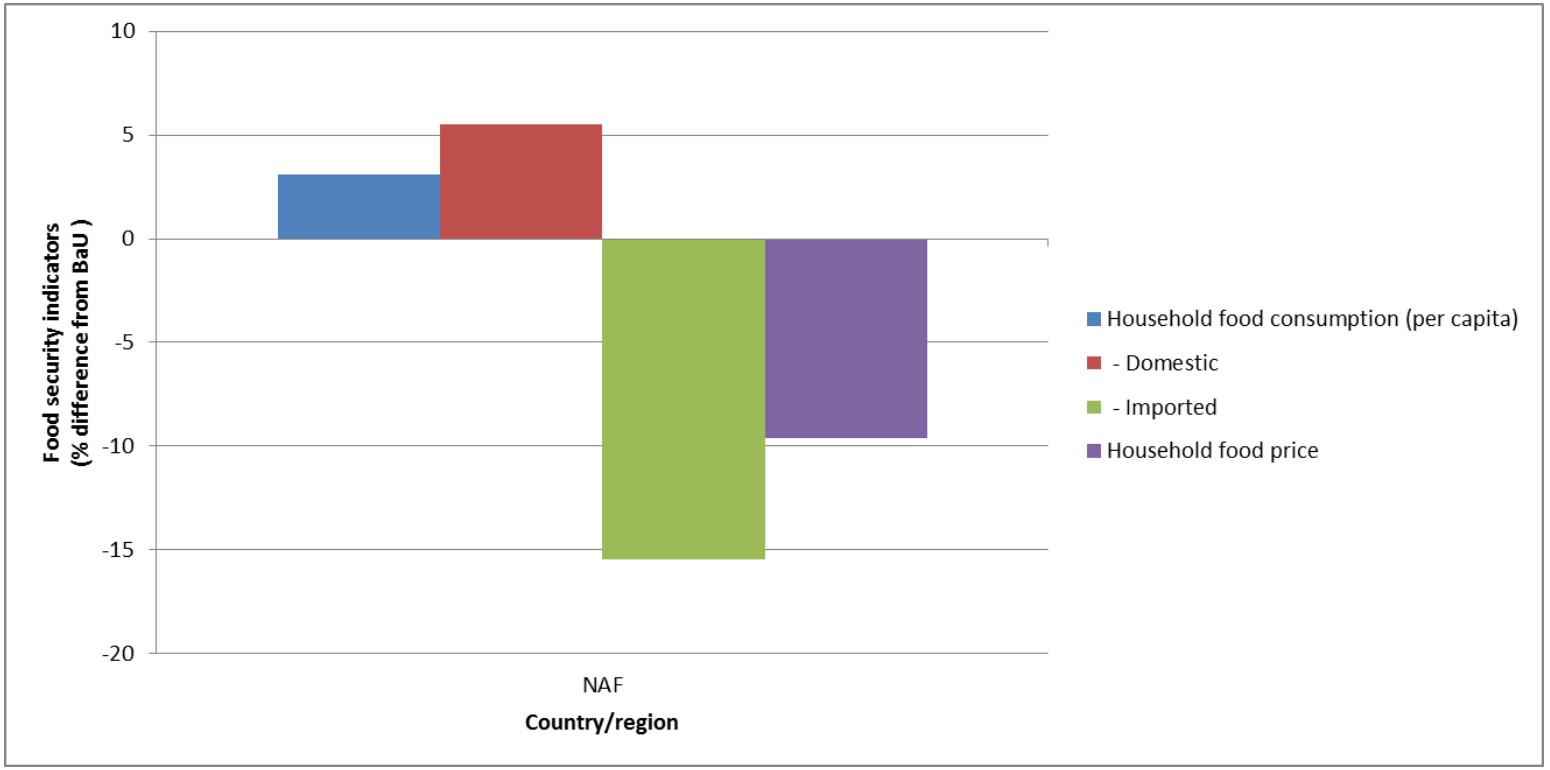
TI scenario: impacts on production, 2020



TI scenario: impacts on employment and real wages, 2020



TI scenario: impacts on food security indicators, 2020



Trends of the impacts on growth, labour market and food security of different scenarios for NAF countries

Scenario	Trade liberalisation (TL)	Broad Investment (BI)	Targeted investment (TI)
GDP	+	++	+
Employment:			
• Agriculture	+	-	-
• Non-agriculture	+	+	+
Real wages			
• Agriculture	+	+	-
• Non-agriculture	+	+	+
Household consumption of food (per capita)	+	+	+
• Domestic food	-	+	+
• Imported food	++	+	-
Household prices	-	+	- -

Concluding remarks (1)

- The positive impacts on economic growth could be intensified by combining pro-investment policies aiming at increasing productivity growth with trade liberalisation as foreseen within DCFTAs
- Addressing NTMs is key within the trade liberalisation process
- The more North African economies grow, the more structural adjustments take place decreasing the importance of agricultural sectors
- Positive impacts on agricultural employment could be strengthened if productivity growth is combined with trade liberalisation (agri-food export enhancing)

Concluding remarks (2)

- Higher economic growth leads to higher demand for food and thus higher prices
- Trade liberalisation counteracts the rising food prices but increases the vulnerability to changes in world market prices
- Increasing agricultural productivity can be a first step to reduce import dependence and hence vulnerability due to world market price fluctuations

- Need for considering national specificity (Egypt, Morocco, Tunisia case studies) within a common regional regulatory framework (Euro-Med)

Thank you

for your attention!

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Annex

MAGNET regional and commodity aggregation

Countries, regions	
egy	Egypt
mor	Morocco
tun	Tunisia
tur	Turkey
MENA	Rest of Middle East and North Africa
esp	Spain
fra	France
grc	Greece
ita	Italy
prt	Portugal
EUIS	Cyprus and Malta
RE27	Rest of EU27
EFTA	European Free Trade Association
cro	Croatia
ROE	Rest of Europe
USA	United States of America
NAM	Rest of North America
CSA	Central and South America
OCE	Australia, New Zealand and Rest of Oceania
ASIA	Asia
SSA	Sub Saharan Africa

Sectors	
pdr	Paddy rice
wht	Wheat
gro	Cereal grains nec
v_f	Vegetables, fruit, nuts
osd	Oil seeds
c_b	Sugar cane, sugar beet
pfb	Plant-based fibers
ocr	Crops nec
ctl	Cattle,sheep, goats, horses
oap	Animal products nec
rmk	Raw milk
wol	Wool, silk-worm cocoons
frs	Forestry
fsh	Fishing
coa	Coal
oil	Crude oil
gas	Gas
cmt	Meat: cattle, sheep, goats, horse
omt	Meat products nec
vof	Vegetable oils and fats
mil	Dairy products
pcr	Processed rice
sgr	Sugar
FBT	Food, bev & tobac prod nec
TCL	Textiles & clothing
p_c	Petroleum, coal products
MNF	Other manufacturing
TRA	Trade & transport (services)
SVC	Other services

Factors of production
Land
Unskilled labour
Skilled labour
Capital
Natural resources

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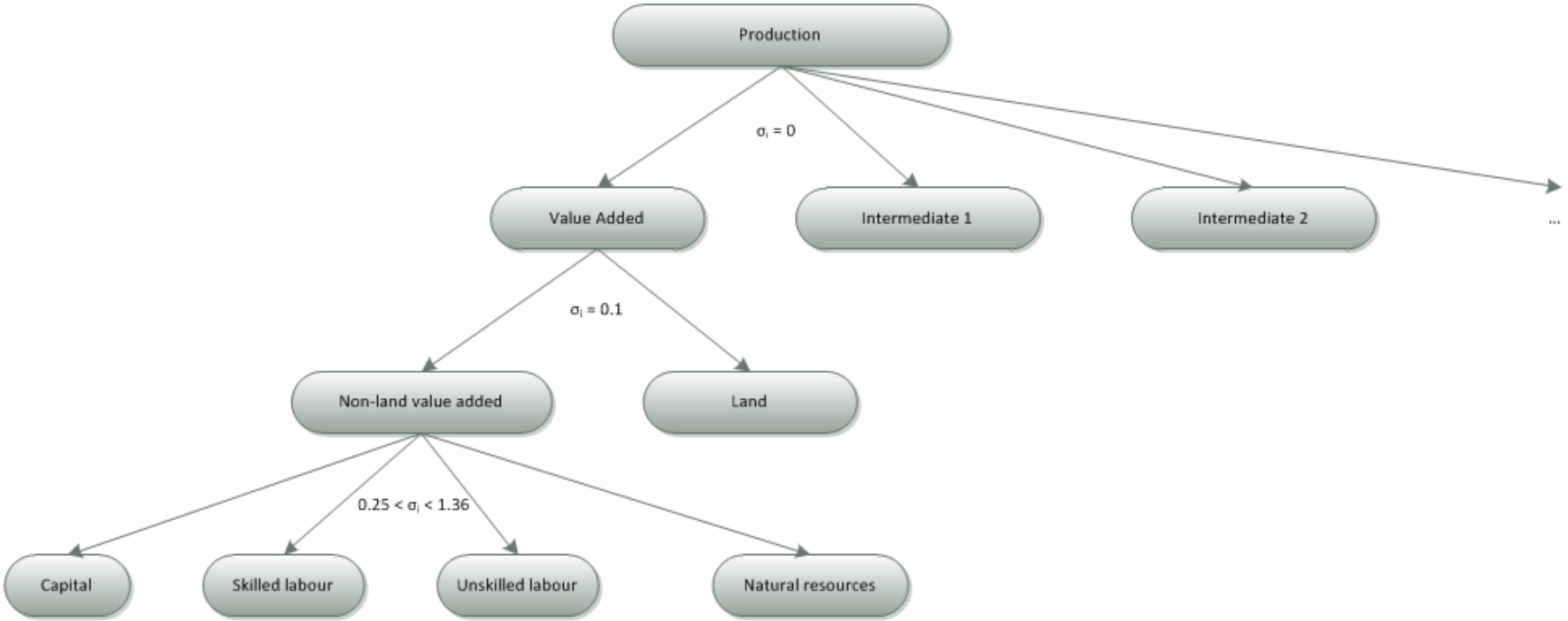
MAGNET production structure



MAGNET consumption structure

- Consumption of private households in GTAP is a Constant Difference of Elasticity (CDE) Function: a more flexible, non-homothetic function; allows for non-constant marginal budget shares; is calibrated using data on income and price elasticities of demand
- In practice the use of this function results in constant income elasticities over time → unrealistically high consumption of food items in fast growing economies
- Solution in MAGNET: income elasticities are dynamically adjusted using real GDP per capita (in the form of a decreasing function)
- Values of income elasticities (EY) base year: between 0 and 1, slightly negative for agri-food, >1 for manufacturing and services sectors

Segmented factor markets in MAGNET

- Standard GTAP: full mobility of capital, skilled and unskilled labour across sectors

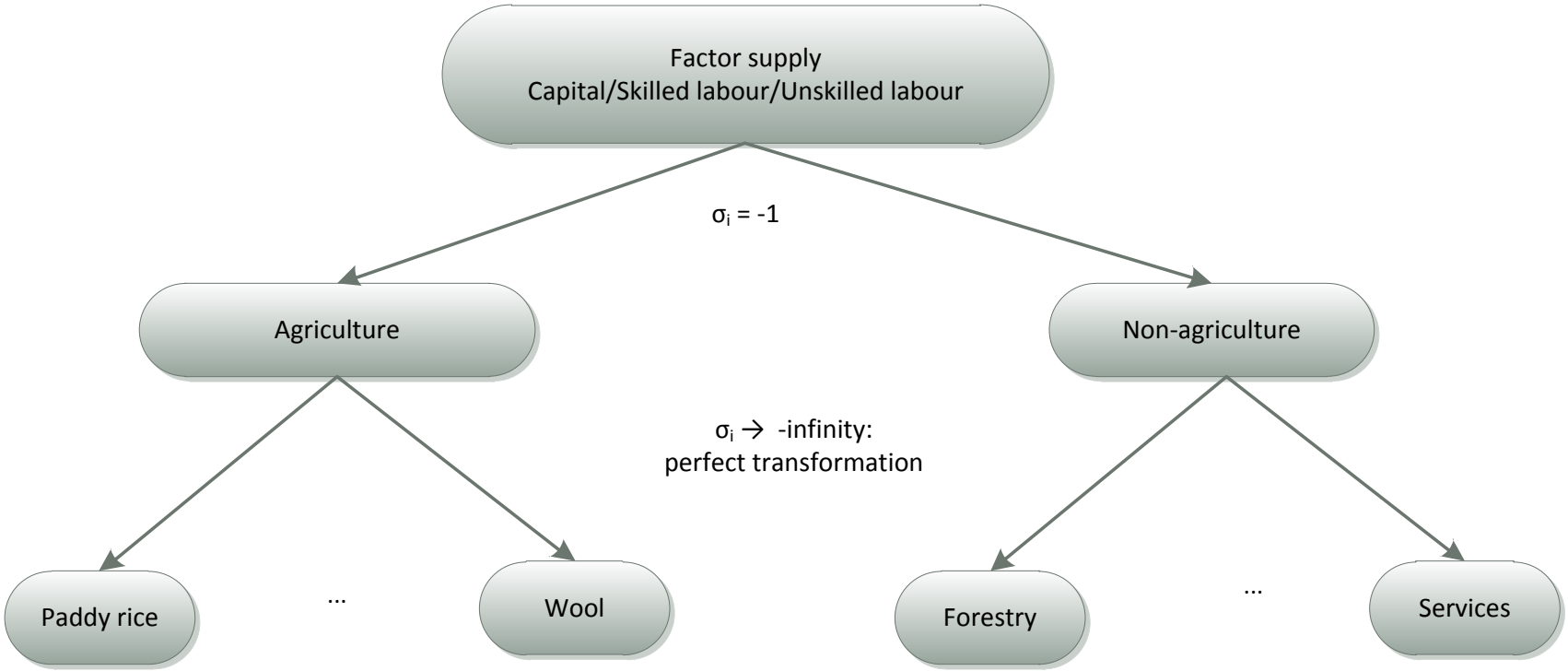
→ Implication: rental rate of capital and wages of skilled and unskilled labour are the same across sectors

- In reality: segmentation between agricultural and non-agricultural sectors and so different rental rate and wages

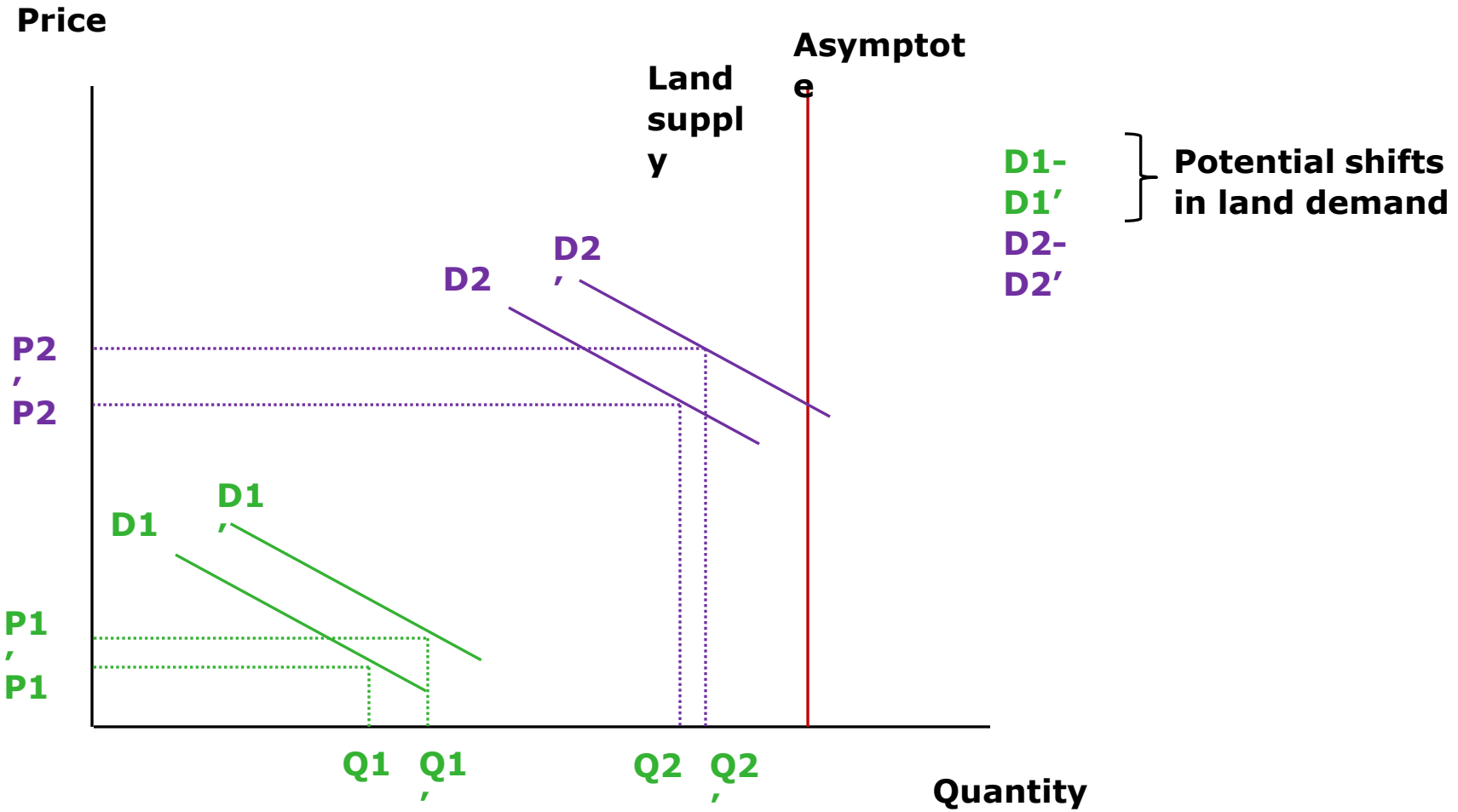
→ Implemented in MAGNET via a nested Constant Elasticity of Transformation (CET) function (for all regions) such that there is: (i) Perfect mobility within agricultural and non-agricultural sectors

(ii) Limited mobility between agricultural and non-agricultural sectors and so different remunerations

Segmented factor markets in MAGNET



Land supply in MAGNET



Business Usual scenario: assumptions on GDP, population and yield growth, 2012-2020