WORLD CEREALS MARKETS UNDER ALTERNATIVE COMMON AGRICULTURAL POLICY REFORMS

C. Benjamin

INRA - Economie Rennes, France
Contact Information : Catherine.Benjamin@roazhon.inra.fr

C. Guéguen

Faculté de sciences Economiques, CREREG, Rennes, France

M. Houée

INRA - Economie Rennes, France

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Abstract

Previous quantitative assessments of likely impacts of recent reforms of the Common Agricultural Policy (in particular the Agenda 2000) differ across empirical studies. Differences are mainly due to the ways the policy instruments are taken into account (explicit modeling or implicit modeling i.e. using ad-valorem equivalents). The aim of this paper is to assess empirically the impacts of recent reforms of the Common Agricultural Policy and the consequences of the Mid-Term proposals on world cereals markets. We develop an econometric, dynamic, multi-product, partial equilibrium commodity model that focuses on arable crops. Major exporters and major importers are modeled separately, other countries being included in a "rest of the world" category. For the countries or regions explicitly integrated the model estimates supply, demand and trade. The model we develop has two important features: i) the parameters estimated in the behavioral equations (supply and demand) satisfy regularity conditions and ii) the agricultural policy instruments (in particular CAP instruments) are modeled in an explicit way. In the empirical section, attention focuses on the world cereals market. We provide a market outlook through the year 2009 for three different scenarios: baseline projections and two scenarios based on different assumptions regarding the evolution of the Common Agricultural Policy (the Mid-Term Review scenario and the decoupling scenario). Estimated effects of the mid-term scenario on EU crop prices depend on the relationship between EU and world market prices.

Keywords: Common Agricultural Policy, partial equilibrium model, world wheat market, simulation, trade.

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World cereals markets under alternative Common Agricultural Policy reforms[1]

1. Introduction

Previous quantitative assessments of likely impacts of recent reforms of the Common Agricultural Policy (in particular the Agenda 2000) differ across empirical studies. The empirical results are conditional on the modeling framework used. Differences are mainly due to the ways the policy instruments are taken into account (explicit modeling or implicit way i.e. using ad-valorem equivalents) (Van tongeren et al (2001)). The aim of this paper is to assess empirically the impacts of recent reforms of the Common Agricultural Policy (CAP) and the consequences of the mid-term proposals on world cereals markets. We develop a World Econometric Modeling of Arable Crops, which is an econometric, dynamic, multi-product, partial equilibrium commodity model that focuses on arable crops. For these commodities, major exporters and major importers are modeled separately, all other countries being included in a "rest of the world" category. For the regions explicitly integrated, the model generates supply, demand, domestic prices and trade estimates. The model is able to determine endogenously the world prices of the main cereals.

The main objective of the model is to carry out medium term simulations of the impact of national and international agricultural policies reforms. The model we develop has two important features: i) the parameters estimated in the behavioral equations (supply and demand) satisfy regularity conditions and ii) the agricultural policy instruments (in particular CAP instruments) are modeled in an explicit way.

The paper is organized as follows. The second section presents the general features of the model we develop and provides an overview on the modeling framework applied to study major wheat exporters and importers behaviors. Potential effects of the Mid-Term Review proposals on European Union and world arable crops markets are discussed in section 3. The fourth section concludes.

2. The structure of the World Econometric Modeling of Arable Crops model

This section outlines the general structure and modeling approach used in the World Econometric Modeling of Arable Crop (WEMAC). Before presenting the behavioral equations of each regional sub-models[2], we first describe the general features of the model, the current country and commodity coverage.

[1] Financial support is provided by the French Ministry of Agriculture and a private partnership (Pluriagri).
[2] In the modeling, a country represents a state and a region refers to an aggregate of different countries.

2.1 Model overview

The World Econometric Modeling of Arable Crops is a partial equilibrium commodity model which focuses on the arable crops world markets. The WEMAC model is an econometric, dynamic, multi-product, non-spatial[3], model. The model consists of a set of country or regional sub-models with linkages established across countries and commodities. The current model considers 8 countries/regions. The current model allows analyzing simultaneously equilibria on the world markets for the following cereals: wheat (durum and soft), maize, barley and other cereals.
The current country coverage is described in table 1.
(Insert Table 1)

The model contains five wheat-exporting countries (Argentina, Canada, the European Union, the United States, the Central and Eastern European Countries, Ukraine), two wheat-importing countries (China, North Africa and Middle East) and the Rest of the world.
An important feature of the modeling is that we do not consider the European Union as a bloc. Indeed the model provides country levels estimates for France, Germany, Italy, Spain and the United-Kingdom while treating the other countries of the European Union as a group[4]. The model generates supply, demand, domestic prices and trade estimates for most of the regions/countries. Additional countries (Ukraine, Africa and Middle East) important to wheat world trade were included: for Africa, the demand side is endogenous, but the domestic production is exogenous, for Ukraine net export function has been endogenized. The rest of the world is exogenous.

The aim of the WEMAC model is to provide quantitative evaluations of national and international agricultural policies reforms. Hence, a notable contribution of that model is in the explicit modeling of the main policy instruments both domestic and those applied at the border mainly for the Common Agricultural Policy Instruments.

Each regional sub-model consists of the following sets of behavioral equations : production (harvested area, yield), deamnd (food use, feed use, stocks), price linkages (prices transmission mechanism between domestic and world prices)[5], trade flows (import and export equations) and the market clearing.
The model is based on econometric estimates of behavioral equations. Most of the equations in the model are estimated using annual data from the period 1970-1999 (or shorter intervals if data are unavailable). The annual series data were obtained from the "PSDView", commodity data base

[3] The model is non spatial because it does not identify trade flows between specific countries regions.
[4] In the definition of the "Rest of the Union", we take into account European Union country enlargement over the estimation period.
[5] For the European union this set of equations include the price transmission equation between market price and intervention price.

(USA/ERS) and from national agriculture departments. For the European Union data were obtained from the Cronos data bank of EUROSTAT.

General behavioral specifications of each individual component in the model are further detailed.

2.2. Behavioral equations and model closure

The following paragraph reviews the conceptual and general description of domestic supply, demand, stocks, prices linkages and trade flows, which defines the general structure of the country sub-models.

2.2.1. Domestic supply

On the world market, the crops modeled (in other words the crops whose prices are endogenous) are maize, barley, soft and durum wheat. Individual models used for each country/region have however been estimated by introducing cross-linkages between other arable crops. Production in country/region is determined as the product of estimated harvested area and yield equations. In each sub-model, we assume a specific separability structure in crop production. According to that assumption land allocation decisions are taken in three stages. In a first stage, producers split the total available area between fodder crops and arable crops. In the second stage, they allocate the area under arable crops among industrial crops and cereals and oilseeds. In the third stage, the area of cereals and oilseeds is divided among the arable crops cultivated in the considered country. The allocation scheme is specific to each country studied. We restrict to the third stage where the total area under grains and oilseeds is assumed to be fixed but allocatable across the various grains and oilseeds (Coyle 1993, Guyomard and al, 1996). Hence, we model a system of arable crops acreage demand as conditional on total arable crops areas. The crop acreage equations can be written as

$$ss_{i,t} = ss(p^a_{j,t} / v_{t-1}, ssgc_t, Z) \qquad i, j = 1,...,n \tag{1}$$

where $ss_{i,t}$ is the crop acreage in year t for the commodity i, $p^a_{j,t}$ is the expected crop output price j ($j=1,...n$), v_{t-1} the input price in t-1, $ssgc_t$ is the total crop acreage allocated to arable crops and Z defines a vector of exogenous which could have an impact (these variables depend on the country and include for instance domestic policy variables). We assume that producers do naïve expectations on prices, i.e. $p^a_{j,t} = p_{j,t-1}$. For the estimations, symmetry conditions and adding-up[6] restrictions are imposed.

For the yields, we use the following specification

$$r_{i,t} = r(p^a_{i,t} / v_{t-1}, T) \tag{2}$$

where $r_{i,t}$ is the yield per hectare in year t for the crop i, T is a linear trend. The area and yield equations are jointly estimated using the iterative Seemingly Unrelated Regression Method.

[6] Adding up is implied by the restriction that the sum of the areas is equal to the total land devoted to arable land.

It is worth noting that in contrast to other partial world models, we do not include income per hectare in the specification, this choice allows to distinguish the effect of prices and other policy instruments (for instance, in the European Union we can compare the effects of decrease of the intervention price with the increase of the area payments).

Previous general specifications may vary for some individual countries particularly for the European Union and the United States in order to take into account the respective domestic polices. For the supply modeling, in the European Union we include per hectare direct payments in area equations. These payments have a direct effect on land demands for each crop. The land set-aside policy is taken account by introducing it in the second stage in the land allocation decisions[7]. For the United States, we incorporate the influence of commodity programs in the area and yield equations by including an additional explanatory variable, which correspond to the mean per hectare of the production flexibility contracts, the deficiency, diversion and disaster payments. Furthermore, the marketing loan is included in the definition of the producer price (both for supply equations and prices linkages equations).

2.2.2. Domestic demand

In each country we estimate only the demand for cereals[8]. Consumption is disaggregated into two final uses: feed and all other uses. The theoretical specification of non-feed use is based on consumer theory. Per capita non-feed demand is determined by the following equation

$$uha_{i,t} = uha(pc_{i,t}, pib_t / pop_t, uha_{i,t-1}) \quad (3)$$

where $uha_{i,t}$ is the per capita non-feed demand for the crop i, $pc_{i,t}$ the real consumption price, pib_t / pop_t is per capita real income. The lagged variable $uha_{i,t-1}$ is included to represent the partial adjustment toward desired consumption.

Since feed is used as an input in livestock production the theoretical specification of feed demand follows from the theory of derived demand. Feed demand is expressed as the following relation

$$ua_{i,t} = ua(pc_{i,t}, pc_{j,t}, PB_{kt}, T) \quad (4)$$

where $ua_{i,t}$ is the feed demand for the crop *i,* $pc_{i,t}$ the real price of the commodity *i,* $pc_{j,t}$ the real price of competing feed products (cereals, oilseeds, other protein feeds), PB_{kt} is the livestock productions (with k=poultry, beef and pork production) and *T* a time trend.

Total domestic use is the sum of feed and non-feed uses.

Stocks

The stock level depends on the consumption price and on the beginning stock (lagged value of the stock variable).

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[7] We try to endogenize set-aside area decisions but we did not have enough available data for the estimations.

[8] In the current model, the demand for oilseeds is exogenous.

2.2.3. Price transmission

A single world price is assumed to exist for each of the commodity. Since producer and consumption domestic prices are different we have transmission price equations to estimate. Except where there are set by government, domestic prices are linked to world prices via linkage equations including exchanges rates. The system to estimate can be written as

$$p_{i,t} = p(pm_{i,t}, h_{i,t}) \quad (5)$$

$$pc_{i,t} = pc(p_{i,t}) \quad (6)$$

where $p_{i,t}$ is the producer price of the crop i $pm_{i,t}$ the world price converted in local currency and $h_{i,t}$ other exogenous variables that affect prices levels (the specification allows to take into account domestic policies for instance, in the case of the European Union we introduce the intervention price as an additional explanatory variable)[9].

In the European Union, at the level of the individual country model, most prices are linked to the French market prices which are generally defined as the leading prices[10].

2.2.4. Import and export equations

The WEMAC model distinguishes between imports and exports.

We distinguish imports on the import regime under which they enter. Hence the imports that occur under the Tariff Rate Quotas (TRQ) system are exogenous and equal to the scheduled TRQ. We defined an import equation for the out of quota imports. The import demand of each country (per capita imports) is specified as a function of the real per capita income, of the tariffs and of the world price of the cereals studied.

The export equation depends on the world price and on the domestic supply (production plus beginning stocks) of commodity *i* in t-1.

2.2.5. Closure of the model

In order to close each regional model a variable is not estimated but calculated as the residual to check the equilibrium on each regional market. After modeling each country, we calculate the sum of all regional and country supplies and the sum of all regional and country demands. Simultaneous solutions[11] of the models are obtained with market clearing equilibria of the different cereals. The sub-models are solved[12] iteratively to obtain equilibrium world prices.

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[9] These price equations are estimated using Three-Least Squares to obtain consistent parameter estimates in the presence of right-hand side endogenous variables as well as contemporaneous correlation among the disturbances.

[10] For the durum wheat the Italian price is defined as the leading price.

[11] We solved simultaneously barley, durum wheat, soft wheat, maize, and other cereals world markets.

[12] We use TSP 4.4.

3. Scenarios and simulations results

This section present an analysis of the Mid-Term Review proposals to asses their potential effects on European Union and world arable crops markets over the period 2004-2009. We run the World Econometric Modeling of Arable Crops for two experiments : i) the Mid-Term Review scenario and ii) the decoupling scenario. The starting point for the analysis, the *status quo* scenario is a set of baseline projections for European Union and world arable crops markets. The section begins by a summary of the baseline projections. The WEMAC reference run describes what will happen on world agricultural markets, over the period 2001 to 2009, if current agricultural and trade policies (situation of 2000) are assumed to remain in place indefinitely. Then the baseline projections are used as a comparison point for discussing the impacts of the evolution of the Common Agricultural Policy on the EU cereals markets and on the world wheat markets. The model is employed to simulate different kinds of implementation of the Mid Term Review.

3.1. Definition of the baseline

We first present baseline projections for world wheat markets for the period 2001-2009. The reference scenario is established under a specific set of assumptions about exogenous shifters which drives the WEMAC model.

The most important assumptions concern agricultural and trade policies. The reference scenario assumes that all government programs and international agreements currently in effect will remain in place over the projection period. In the European Union, the reference scenario corresponds to the full implementation of the Agenda 2000 Common agricultural reform[13].

For the forecasts of macroeconomic variables (real income per capita, rate of population growth, exchange rates…), the baseline is generated either by using our own time trends and constant growth rates or with forecasts coming from FAPRI assumptions[14]. At last, the agricultural commodity production and prices, which are not modeled in the current version (such as livestock production, input prices, oilseeds prices), evolve as FAPRI forecasts.

A summary of the main findings in the reference scenario is provided in table 2 to 4. Over the medium-term cereals would benefit from increasing yields, and higher direct payments would on average partially outweigh the cut in cereals price support prices. Hence total cereal area in the EU is projected to exhibit a slow increase over the medium-term over 37.2 millions ha to 38.3 in 2009.

(Insert table 2)

The medium-term outlook for arable crops markets is foreseen to remain essentially supported by a rising demand driven by an improved macro-economic environment and the continuing growth in the feed demand from livestock sector.

[13]The cereals intervention price is reduced at 103.3 EUR/t, compensation payment for oilseeds is aligned on direct payment on cereals (63 EUR/t), continuation of monthly increments in intervention price.

Since demand for wheat and maize will increase more tightly than production, european prices are projected to increase on the period 2001-2009 (+2% for the French soft wheat producer price, +0.56% for the French soft wheat market price, +6.3% for the French maize producer price, +3.3% for the French maize market price). For the same reasons, on the word market cereals, prices are estimated to reach around 120 $/t for Soft Red Winter wheat (SRW wheat)[15] and 108$/t for maize. Note that world prices will increase more tightly than european prices. So, in the baseline scenario the implementation of Agenda 2000 reform leads to a decline in the gap between the european price and the world price which contributes to improve EU cereals competitiveness. Exports of maize and durum wheat would remain broadly stagnant whereas wheat exports will increase highly. Furthermore in the baseline we found that the EU will export beyond its Uruguay Round Agreement on Agriculture limits on subsidized exports[16].

(Insert table 3 and 4)

3.2. Model results

We present the results of two simulations based on different assumptions regarding the recent 'Mid Term Review' proposals over the period 2004-2009.

The first experiment corresponds to the implementation of the proposed market measures. The 2002 'Mid Term Review' (MTR) proposals for the Common Agricultural Policy contain the following elements for grains: further reduction in the cereals intervention price[17], compensation for the cut in cereal price by increased direct payments (from 63 euros per tonne to 66 € per tonne). The MTR proposals contain the removal of monthly overvaluation.

The second experiment introduces the concept of decoupling with the granting of a single decoupled income payment per farm. In that scenario, we assume that the new payments will have no effect on production decisions.

Note that in each experiment there is a mandatory system of land set aside which remains set at the 10% reference rate.

3.2.1. Market measures scenario

On the supply side, compared to the current policy baseline, changes in support price and in the payments lead to a modest reduction in aggregate EU soft wheat and maize production (respectively 0.1% and 1.5% in 2009 see table 5). More precisely, concerning the wheat market, cut in the intervention price will reduce the producer price by 8.5% which will cause a reduction of the area harvested by 0.1%. But the final effect on production level will be weak because yields would increase on account of the decrease in low-yielding, marginal land and partially compensate the decline in area

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[14] The FAPRI (Food and Agricultural Research Policy Institute) forecasts come from Standard and Poor's DRI.
[15] The SRW wheat generally quotes around 10% below the Hard Red Winter wheat (HRW).
[16] That result is still holding in a context of a less favorable $/€ exchange rate.

harvested[18]. Moreover, the decrease in production level is limited by the increasing direct payments even if they don't overweigh the negative effects of reducing the support price.

(Insert table 5)

On the demand side, the reduction of the support price for the cereals would lead to european lower market prices of the soft wheat on the whole period. This would cause a small increase in soft wheat consumption whereas lower availability should constrain cereal exports. Moreover the reduction in the cereal support price should affect EU border protection for the main cereals and generate additional imports. The net exports in soft wheat is reduced by 1.3% and net imports of maize rise by 1.8%.

Note that producer prices would drop sharply due to the reduction of the support price. In contrast to previous studies which do not distinguish market price from producer price we find stronger decrease of EU domestic prices. EU soft wheat prices are not supported by the world market prices.

(Insert table 6 to 7)

World cereals prices are found to trend upward over the medium term. The Euro wheat price remains slightly below world market level during the simulation period and the gap between EU price and international prices narrowed down.

As noted by previous studies the estimated effects of the mid-term scenario on EU crop prices depend on the relationship between EU and world market prices.

In our experiment, the limited impact on production level is linked to the transmission prices mechanism estimated in the Wemac model. Indeed, table 7 presents the prices variations for the country which is assumed to lead the domestic market (for instance for the wheat market the french price is considered as the leading price).

3.2.2. The decoupling scenario

The implementation of this scenario introduces the concept of decoupling with the granting of a single decoupled income payment. A fundamental assumption realized when we run this scenario is that we assume that the single payment will have no impact on production decisions of farmers. A summary of the impact for the main variables for the soft wheat and the maize in the EU is given in tables 8 to 10.

(insert table 8)

The overall impact of this experiment on the cereal market would have stronger effects than the projected impact of the first scenario: further decrease of the production (by 3.1% in place of 0.1% for the soft wheat and 5.6% in place of 1.5% for the maize market). This result partially comes from the further decrease in area harvested (-2.7% in spite of –0.1% for the soft wheat) due to the removal of direct payments.

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17 The price goes from 101.3 euros per ton to 95.35 euros per ton in 2004/05.

Lower wheat production would affect the competiveness of EU exports which would fall by approximately 12% whereas EU cereals imports would increase owing to the reduction in EU's border protection. This would lead to a further increase of the world price especially on the wheat market.

(Insert table 9 to 10)

The second result is that we observe important disparities, which emerge between the United States and the European Union. Implementation of European reforms leads a contraction of the European Union wheat production and net exports (–13.5%), offset by an expansion of wheat production and net exports of the United States (Table 11).

(Insert table 11)

4. Concluding comments

An econometric, dynamic, multi-product, partial equilibrium commodity model is developed to analyze world wheat trade under current and alternative Common Agricultural Policy reforms. Our analysis contributes to previous studies by taking into account policy instruments (and in particular CAP instruments and having some country-levels details for the European Union. An important feature is we do not consider identical effect of direct payments and prices on supply decisions for the European producers.

The paper present a market outlook for two simulations based on different assumptions regarding CAP reforms to asses their potential effects on European Union and world arable crops markets over the period 2004-2009. We run the World Econometric Modeling of Arable Crops for two experiments : i) the Mid-Term Review scenario and ii) the decoupling scenario. The starting point for the analysis, the *status quo* scenario is a set of baseline projections for European Union and world arable crops markets. Then the baseline projections are used as a comparison point for discussing the impacts of the evolution of the Common Agricultural Policy on the EU cereals markets and on the world wheat markets. The model is employed to simulate different kinds of implementation of the Mid Term Review. The estimated effects of the mid-term scenario on EU crop prices depend on the relationship between EU and world market prices.

An important result is that in both scenarios we find stronger decrease of EU domestic prices. EU soft wheat prices are not supported by the world market prices Note that producer prices would drop sharply due to the reduction of the support price. In contrast to previous studies which do not distinguish market price from producer price. The results of the second scenarios is significant contraction of European Union wheat production and net exports offset by expansion of wheat production and net exports of United States.

[18] The effect on maize production is higher because of decreasing yields.

Table 1. Countries and regions modeled

Country/Region	Country-level details	Imports and exports in % with respect to the world wheat market (2001 figures)
Net exporters		
Argentina		14.5
Canada		18.5
European Union (15 countries)	France Germany Italy Spain United-Kingdom Rest of the Union	7.9
United States		28.9
Central and Eastern European Countries	Bulgaria Czech Republic Hungary Poland Romania Slovakia	4.5
Ukraine		4.6
Net importers		
North Africa, Middle East		36.9
China		0.6
Rest of the world		35.3

Table 2. Baseline Scenario: area under arable crops: (millions ha)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cereals	37.2	37.8	38.0	38.1	38.1	38.2	38.2	38.2	38.3
Oilseeds	4.7	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.1
Protein crops	2.8	2.5	2.6	2.6	2.7	2.7	2.8	2.8	2.8
Total arable crops	44.7	44.9	45.1	45.3	45.5	45.7	45.9	46.1	46.3
set aside	4.7	4.9	4.5	4.5	4.5	4.6	4.6	4.6	4.6
Total COP	49.4	49.8	49.6	49.8	50	50.3	50.4	50.7	50.9

Table 3. Baseline Scenario: World prices, 2001-2009 (expressed in US dollars /tonnes)

World prices ($/t)	2001	2002	2003	2004	2005	2006	2007	2008	2009
Soft wheat (SRW) (1)	96.5	94.2	100.9	95.1	94.7	97.2	103.3	112.4	119.2
Durum wheat	164.0	163.9	165.4	170.2	171.4	176.2	178.6	182.1	184.3
Maize	79.9	73.5	73.7	78.6	78.7	78.3	86.6	98.0	108.1

(1) The Soft Red Winter (SRW) wheat generally quotes around 10% below the Hard Red Winter wheat (HRW).

Table 4. Baseline Scenario: Arables crops price (expressed in euros/tonnes)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
French Soft wheat producer price	94.2	92.5	93.7	91.0	90.9	91.5	92.8	94.9	96.5
French Soft wheat market price	125.6	125.1	125.4	124.6	124.6	124.7	125.1	125.8	126.3
French maize producer price	94.1	90.4	90.0	90.1	90.2	90.0	92.8	96.6	100.0
French maize market price	136.4	133.5	133.2	133.3	133.3	133.2	135.3	138.3	140.9

Table 5. Arable crops supply and utilization results (Market measures scenario)

	2004 baseline	2004 MTR	Change	2009 baseline	2009 MTR	Change
Soft wheat						
Area harvested	13.8	13.8	0%	14.1	14.1	-0.1%
Yield	7.2	7.2	0%	7.8	7.8	0.01%
Production (mil tones)	100.1	100.1	0%	109.8	109.7	-0.1%
Domestic use (mil tonne)	82.5	82.8	0.4%	85.9	86.2	+0.3%
Net exports	16.8	24.5	+1.0%	24.5	24.2	-1.3%
Maize						
Area harvested	4.1	4.1	0%	4.2	4.2	-1.1%
Yield	9.7	9.7	0%	10.7	10.7	-0.4%
Production (mil tonne)	40.1	40.7	0%	45.6	44.9	-1.5%
Domestic use (mil tonne)	39.3	39.2	-0.4%	45.7	45.6	-0.2%
Net imports	0.4	0.5	+4.5%	1.5	1.6	+1.8%
Durum						
Area harvested	3.3	3.3	0%	3.3	3.3	0.5%
Yield	2.6	2.6	0%	2.6	2.7	0.5%
Production (mil tones)	8.7	8.7	0%	8.6	8.7	1%
Domestic use (mil tonne)	9.2	9.2	0.%	10.3	10.3	+0.3%
Net exports	0.1	0.1	+46.6%	0.2	0.2	+25.5%

Table 6. World prices under the MTR scenario

World prices ($/t)	2004	2005	2006	2007	2008	2009
Soft wheat (SRW)						
Baseline	95.1	94.7	97.2	103.3	112.4	119.2
MTR	94.1	95.2	98.5	105.0	114.3	121.2
Difference	-1.0%	+0.6%	+1.4%	+1.7%	+1.7%	+1.7%
Maize						
Baseline	78.6	78.7	78.3	86.6	98.0	108.1
MTR	78.7	78.3	78.6	87.2	98.8	108.9
Difference	+0.1%	-0.5%	+0.4%	+0.7%	+0.8%	+0.7%

Table 7. Arables crops price (euros/tonnes) under the MTR scenario

	2004	2005	2006	2007	2008	2009
French Soft wheat producer price						
Baseline	91.0	90.9	91.5	92.8	94.9	96.5
MTR	82.1	82.4	83.1	84.6	86.7	88.3
Difference	-9.7%	-9.4%	-9.1%	-8.9%	-8.6%	-8.5%
French Soft wheat market price						
Baseline	124.6	124.6	124.7	125.1	125.8	126.3
MTR	121.9	122.0	122.2	122.7	123.3	123.8
Difference	-2.1%	-2.1%	-2.0%	-2.0%	-2.0%	-2.0%
French maize producer price						
Baseline	90.1	90.2	90.0	92.8	96.6	100.0
MTR	84.3	84.2	84.3	87.2	91.1	94.5
Difference	-6.4%	-6.6%	-6.4%	-6.1%	-5.8%	-5.6%
French maize market price						
Baseline	133.3	133.3	133.2	135.3	138.3	140.9
MTR	128.8-	128.6-	128.7-	131.0	134.0	136.6
Difference	-3.4%	-3.5%	-3.3%	-3.2%	-3.1%	-3.1%

Table 8. Arable crops supply and utilization results: Decoupling scenario

	2004 baseline	2004 decoupling	Change	2009 baseline	2009 decoupling	Change
Soft wheat						
Area harvested	13.8	13.8	0%	14.1	13.7	-2.6%
Yield	7.2	7.2	0%	7.8	7.8	-0.5%
Production (mil tones)	100.1	100.1	0%	109.8	106.4	-3.1%
Domestic use (mil tonne)	82.5	82.8	+0.4%	85.9	86.0	+0.1%
Net exports	16.8	17.0	+1.0%	24.5	21.1	-13.7%
Maize						
Area harvested	4.1	4.1	0%	4.2	4.0	-5.2%
Yield	9.7	9.7	0%	10.7	10.7	-0.4%
Production (mil tonne)	40.1	40.1	0%	45.6	43.1	-5.6%
Domestic use (mil tonne)	39.3	39.2	-0.4%	45.7	45.7	-0.1%
Net imports	0.4	0.4	4.5%	1.5	1.7	10.3%
Durum						
Area harvested	3.3	3.3	0%	3.3	3.0	-6.8%
Yield	2.6	2.6	0%	2.6	2.8	+6.9%
Production (mil tones)	8.7	8.7	0%	8.6	8.6	-0.4%
Domestic use (mil tonne)	9.2	9.2	0.2%	10.3	10.3	0.3%
Net exports	0.1	0.2	46.6%	0.2	0.2	25.5%

Table 9. World prices under the decoupling scenario

	2009		
	Baseline	MTR	Decoupling
Soft wheat price (SRW)	119.2	121.2 1.7%	144.2 +20.9%
Maize	108.1	108.9 0.7%	117.3 +8.5%

Table 10. Arables crops price (euros/tonnes) under the decoupling scenario :

	2004	2005	2006	2007	2008	2009
French Soft wheat producer price						
Baseline	91.0	90.9	91.5	92.8	94.9	96.5
Decoupling	82.1	85.1	87.0	89.2	91.6	93.5
Difference	-9.7%	-6.4%	-4.9%	-4.0%	-3.4%	-3.1%
French Soft wheat market price						
Baseline	124.6	124.6	124.7	125.1	125.8	126.3
Decoupling	121.9	122.8	123.4	124	124.8	125.3
Difference	-2.1%	-1.4%	-1.1%	-0.9%	-0.8%	-0.7%
French maize producer price						
Baseline	90.1	90.2	90.0	92.8	96.6	100.0
Decoupling	84.3	84.2	86.0	89.4	93.7	97.3
Difference	-6.4%	-6.6%	-4.5%	-3.6%	-3.1%	-2.8%
French maize market price						
Baseline	133.3	133.3	133.2	135.3	138.3	140.9
Decoupling	128.8-	128.7-	130.0-	132.7	136.0	138.8
Difference	-3.4%	-3.5%	-2.4%	-1.9%	-1.7%	-1.5%

Table 11. Decoupling scenario effect on the USA

Wheat	2004	2005	2006	2007	2008	2009
Production						
baseline	61.4	61.6	62.5	63.5	64.2	64.9
MTR	61.4 (0%)	61.6 (-0.1%)	62.5 (+0.1%)	63.5 (+0.1%)	64.2 (+0.1%)	65.0 (+0.1%)
decoupling	61.4 (0%)	61.6 (-0.1%)	63.1 (+1.0%)	64.1 (+1.0%)	64.9 (+1.1%)	65.6 (+1.1%)
Exportations						
baseline	27.7	26.6	26.5	27.0	27.5	27.9
MTR	27.7 (-0.1%)	26.6 (-0.1%)	26.6 (+0.3%)	27.1 (+0.3%)	27.6 (+0.4%)	28.0 (+0.4%)
decoupling	27.7 (-0.1%)	27.0 (+1.3%)	27.6 (+4.1%)	28.2 (+4.6%)	28.9 (+5.2%)	29.4 (+5.3%)
Importations						
baseline	2.5	2.6	2.6	2.6	2.6	2.6
MTR	2.5 (0%)	2.6 (+0.1%)	2.6 (0%)	2.6 (-0.1%)	2.6 (-0.1%)	2.6 (-0.1%)
decoupling	2.5 (0%)	2.6 (+0.5%)	2.6 (-0.7%)	2.6 (-0.8%)	2.6 (-1.0%)	2.6 (-1.1%)

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