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Effects of decoupling in EU member states – A partial equilibrium analysis

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Content

1 Introduction

Under the Mid Term Review (MTR) reform package of the Common Agricultural Policy (CAP) of the EU, most direct payments granted to agricultural producers will be decoupled from production. This is expected to have effects on the composition of agricultural production in the EU. On the one hand, decoupling of area payments will raise the relative gross margins of crops which were not subject to direct payments before the MTR (mainly fodder crops) compared to those crops which were already eligible for direct payments under Agenda 2000 policies (cereals, oilseeds, protein crops and set-aside). This reform may shift fodder supply functions to the right, which could lead to lower fodder prices and potentially to higher supply of ruminant products. On the other hand, decoupling of beef payments will reduce gross margins of beef production which could lead to lower beef supply and less feed demand for fodder. This would lead to lower fodder prices and thus shift the supply functions for grandes cultures to the right. Moreover, it has also been argued that payments under the new CAP scheme would lead to a higher amount of voluntarily set-aside area. Thus, decoupling can be expected to have complex effects and the net effect on crop and fodder area is unclear.

These effects could additionally be different among member countries for at least three reasons. First, in contrast to the old EU-15 the new member states (NMS) from Central and Eastern Europe receive CAP payments for the first time. Secondly, these payments are slowly phased in and reach the EU-15 level not until 2010 (if the maximum level of national top-up is paid). Thirdly, the degree of keeping a part of the payments coupled to production varies significantly between member states.

Against this background, this paper has the purpose to look at the effects of decoupled direct payments on land use and ruminant production in individual member countries of the enlarged EU. This is done by an extended version of the European Simulation Model (ESIM). Thereby, the focus is on the sectoral level.

The paper is structured as follows: Section 2 summarises those provisions of the MTR reform, which are most relevant for the simulation of decoupling effects with ESIM. Section 3 provides a short overview of the extended version of ESIM. Section 4 then includes the application of ESIM in order to simulate the effects of decoupling on land use, production, and prices. After a short description of the scenarios chosen, results are presented and interpreted. Finally, in Section 5 key findings are summarised and discussed and an outlook on future research is given.

2 The decoupling regulations of the Mid-Term-Review reform

Within the next years decoupled payments will replace most of the direct payments paid to European farmers so far. The new payment does not depend on the production of certain commodities any more but is granted for almost all types of agricultural area use. However, according to the cross compliance regulations the receipt of payments is bound to environmental and animal welfare obligations. Though the scheme of decoupled payments has come into force on January 1st 2005 EU member states are allowed to delay its implementation by up to two years, i.e. until January 1st 2007 (AGRA EUROPE, 2005). The following sections describe those provisions of the MTR reform, which are most relevant for the simulation of decoupling effects with ESIM.

2.1 Partial decoupling

Full decoupling is the general principle from 2005 onwards. However, as an alternative to the full decoupling approach, individual member states may opt to retain part of the pre-existing product-related CAP aid schemes based on crop area or animal numbers. This approach is known as "partial decoupling". The following options are open to member states:

- *Arable crops:*

  Member states can retain 25 % of the COP (cereals, oilseeds, and protein crops) component of the decoupled premium or up to 40 % of the supplementary durum wheat aid and continue granting the existing coupled payments up to the abovementioned percentage levels.

- *Sheep and goats:*

  Coupled payments for sheep and goats can be maintained at up to 50 %.

- *Beef:*

  In the bovine sector members are allowed to maintain the current suckler cow premium at up to 100 % and the beef slaughter premium at up to 40 %. Alternatively, they could keep 100 % of the current beef slaughter premium or, instead, up to 75 % of the special male premium coupled (EUROPEAN COMMISSION, 2003).

2.2 Additional payments – national envelopes (Article 69)

Member states are also allowed to grant additional payments to their producers "for the purposes of encouraging specific types of farming which are important for protection or

enhancement of the environment and of improving the quality and marketing of agricultural products." These payments, however, must not exceed 10 % of each country's overall national aid entitlement. Rates of aid under this scheme have to be lower than any specific coupled aids payable in the beef, sheep, and arable sectors (AGRA EUROPE, 2005).

2.3 Payments based on historical entitlements versus regionalised flat-rate

According to the Luxembourg agreement the single farm payment (SFP) in principle is based on actual receipts by each farmer in the reference period 2000 to 2002. Alternatively, member states may opt to make the SFP at a flat-rate regional level. In this case, for all eligible hectares within one region the same flat-rate aid is paid. Eligible for decoupled payments is all land, which is used for any agricultural activities, except for the production of potatoes (other than starch potatoes), fruit and vegetables, or any other permanent crop (ISERMEYER, 2003).

2.4 The dairy premium

Direct payments to dairy producers have been introduced in 2004 and are paid per tonne of quota held on March 31st 2004. Thereby, the premium increases from 1.18 ct/kg in 2004 to 2.37 ct/kg in 2005 and 3.55 ct/kg in 2006. Member states are obliged to incorporate the dairy premium into the SFP not later than 2007. Should member states decouple the dairy premium at an earlier point of time the value of SFP has to be increased according to the scheduled increase in the milk premium in the years 2005 and 2006 (AGRA EUROPE, 2005).

2.5 Modulation

From 2005 to 2012 the MTR foresees an obligatory modulation, i.e. a proportion of the SFP and all other coupled direct payments have to be deducted from farmers and channelled into a new fund to create additional resources for rural development measures. In 2005 diect payments are reduced by 3 % and in 2006 by 4 %. Between 2007 and 2012 5 % of direct payments are withheld. In addition, member states are allowed to increase these rates as a way of procuring additional funding for national rural development and agri-environmental schemes (AGRA EUROPE, 2005).

2.5 Decoupling regulations for the new member states

As an alternative to the SFP system applied in the old EU-15 member states the NMS can opt for a simplified Single Area Payment Scheme (SAPS) until the end of 2008. Apart from Malta and Slovenia all of the NMS have chosen to operate the SAPS. In case of an application of the

SAPS farmers receive a uniform regionalised premium per hectare. This regulation is similar to the provisions of the regionalised premium under the SFP. However, in contrast to the SFP, payments under the SAPS are also granted for fruits and vegetables, potatoes etc. Not later than 2009 NMS, which have opted for SAPS, have to change their system and are obliged to adopt the regionalised version under the SFP. Just as the members of the EU-15 the NMS are allowed to couple a part of their payments to production from 2009 onwards (see section 2.1).

The level of direct payments in the NMS is phased-in stepwise over a period of ten years to the level prevailing in the old member sates. Table 1 shows that the level of payments financed by the EU budget amounted to 25 % of the EU-15 level in 2004. In 2013 these payments will have reached the EU-15 level. However, it was also agreed that the NMS can grant their farmers an additional „top-up“ payment equivalent to 30 % of the full EU rate. This means that farmers in the NMS may in fact receive up to 55 % of the full EU rate in the first year and the full EU rate already in 2010. However, it is not allowed that the sum of EU payments and national top-ups exceeds the level of direct payments existing in EU-15 member states. (AGRA EUROPE, 2005).

Table 1: Direct payments in the new member states (in % of EU-15-payments)

Year	EU financed payments	National financed top-ups	Maximum payment level
2004	25	30	55
2005	30	30	60
2006	35	30	65
2007	40	30	70
2008	50	30	80
2009	60	30	90
2010	70	30	100
2011	80	20	100
2012	90	10	100
2013	100	0	100

Source: AGRA EUROPE (2005).

2.6 Implementation of decoupling provisions in the member states of the EU-15

In some countries the SFP has already been applied in the beginning of 2005. Other countries have opted for a start of the new system in 2006. The following section provides a short overview of how the decoupling regulations concluded on the Luxembourg summit have been implemented in the old member states of the EU.

As shown in Table 2 most countries of the EU-15 have started to decouple their payments (partly) from production already in the beginning of 2005. Only Finland, France, Greece, the Netherlands, and Spain have introduced the new payment scheme in 2006.

No member state has opted for an immediate implementation of the regionalised premium. Most countries (Austria, Belgium, France, Greece, Ireland, Italy, Netherlands, Portugal, Scotland, Spain and Wales) have chosen payments that are based on historical entitlements. All other countries realise the decoupling provisions by a combination of a uniform regionalised premium and premium that is based on historical entitlements. In Luxembourg, Sweden and Northern Ireland this mix of both payment systems will persist over the next years ("static hybrid" version). Denmark, Germany, Finland, and England have opted for combinations of both payment systems, which include a stepwise phasing-out of the historical element to leave a pure regional-based system at the end of the process ("dynamic hybrid" version).

Government decisions with respect to the degree of decoupling of direct payments have also differed significantly among member states. The payments are fully decoupled from production in Germany, England, Ireland, Luxembourg, Northern Ireland, and Wales and almost fully decoupled in Scotland, Italy, and Greece. In the latter three countries payments are only coupled by applying the Article 69 so that coupling rates do not exceed 10 %. France and Spain, in contrast, have chosen to keep the payments coupled to production as much as possible in all agricultural sectors. Spain has decided to additionally apply Article 69 in case of beef and milk. Thus, even a part of the milk premium remains coupled to production beyond 2007.

Portugal has opted to couple its payments for all ruminant producers, i.e. beef and sheep meat producers, to the highest possible degree, though not applying Article 69. To a somewhat minor degree coupled payments for ruminants also exist in Austria, Belgium, Denmark, Finland, the Netherlands, and Sweden, and by applying Article 69 also in Greece, Italy, and Scotland.

Payments for arable crops are coupled to the highest degree possible in France and Spain and by the application of Article 69 also in Finland, Greece, and Italy.

In Denmark, Germany, England, Ireland, Northern Ireland, Scotland, and Wales the milk premium has been included in the SFP in 2005 already. In Belgium, Italy, and Spain this step

is foreseen at 2006. All remaining countries plan to include the milk premium into the new payment scheme in 2007 (AGRA EUROPE, 2005).

Table 2: Implementation of decoupling regulations in the old member states[1,2]

Country	Implementation of SFP/ Decoupling of milk premium	SFP system	Coupling rates
Austria	2005, Milk 2007	historical	100 % suckler cows 40 % adult cattle slaughter 100 % calf slaughter
Belgium	2005, Milk 2006	historical	100 % suckler cow 100 % calf slaughter
Denmark	2005, Milk 2005	dynamic hybrid	75 % special male beef 50 % sheep
England	2005, Milk 2005	dynamic hybrid	Full decoupling
Finland	2006, Milk 2006	dynamic hybrid	75 % special male beef 50 % sheep Article 69: - 2.1 % for COP - 10 % for beef
France	2006, Milk 2006	historical	25 % arable crops 100 % suckler cows 40 % adult cattle slaughter 100 % calf slaughter 50 % sheep
Germany	2005, Milk 2005	dynamic hybrid	Full decoupling
Greece	2006, Milk 2007	historical	Article 69: - 10 % for COP - 10 % for beef - 5 % for sheep
Ireland	2005, Milk 2005	historical	Full decoupling
Italy	2005, Milk 2006	historical	Article 69: - 7 % for COP - 8 % for beef - 5 % for sheep
Luxembourg	2005, Milk 2006	static hybrid	Full decoupling
Netherlands	2006, Milk 2007	historical	100 % adult cattle slaughter 100 % calf slaughter

[1]The figures in this table refer to the latest information from the member states. However, for some members it is not sure whether these figures are the final ones.

[2]In chapter 4 results are not displayed for each member of the United Kingdom, but for the United Kingdom as an aggregate. However, since each member could chose its own way of implementing the MTR each member is depicted individually in Table 2.

Table 2: Implementation of decoupling regulations in the old member states (continued)

Northern Ireland	2005, Milk 2005	static hybrid	Full decoupling
Portugal	2005, Milk 2007	historical	100 % suckler cows 40 % adult cattle slaughter 100 % calf slaughter 50 % sheep
Scotland	2005, Milk 2005	historical	Article 69: 10 % for beef
Sweden	2005, Milk 2005	static hybrid	75 % special male beef
Spain	2006, Milk 2006	historical	25 % arable crops 100 % suckler cows 40 % adult cattle slaughter 100 % calf slaughter 50 % sheep Article 69: - 7 % for beef - 10 % for milk
Wales	2005, Milk 2005	historical	Full decoupling

Source: AGRA EUROPE (2006).

3 Description of ESIM

ESIM is a recursive dynamic partial equilibrium model with lagged price responses at the supply side. It is programmed in GAMS and covers 36 products plus voluntary set-aside area and 29 regions. World market prices are endogenous and trade is modelled as net trade. The models' focus is on the EU with a detailed formulation of agricultural policies in individual EU-15 member states as well as in the NMS and the EU accession candidates. In order to model country-specific options of implementing the decoupling regulations the aggregated model region of the EU-15 has been split up into individual member states as one part of workpackage 9 of the IDEMA project.

Supply of crops and fodder in ESIM is determined by a yield function, dependent on the own price and price indices for intermediate inputs and labour, and an area allocation function dependent on own and cross incentive prices (including direct payments – see below) as well as intermediate input, capital, and labour cost indices. All area allocation functions are isoelastic, homogeneous of degree zero in all in- and output prices, and locally symmetric. In order to ensure that all crop area (except mandatory set-aside area) is used for agricultural production, ESIM uses a scaling process by which the area allocated is scaled evenly up or down according to total crop area available. Supply of animal products is a function of own

and cross incentive prices as well as a feed cost index (FCI) and price indices for other intermediate inputs, capital and labour.

Direct payments enter the area allocation functions in the same way as prices; that is, market price and direct payment per product unit make up an "incentive price," which is the explaining variable. The calculation of the level of direct payments depends on the country in question and the policy applied:

- Coupled payments per ton in member states of the EU-15 are calculated by

  *Payment per ton * Yield in base period / Actual yield.*

  That is, the payment per ton is adjusted by the actual yield for each crop and simulation period. Thus, an increase in yield leads to a decrease in the premium per ton and vice versa.

- Coupled payments per ton in the NMS are calculated by

  *Phasing-in factor * Payment per ton in EU-15 * Yield in base period / Actual yield.*

  That is, the calculation corresponds almost to the one applied for EU-15 members. However, the phasing-in factor takes care that payments in the NMS reach the level existing in the EU-15 only stepwise.

- Decoupled payments per ton in both member states of the EU-15 and NMS are calculated by

  Uniform payment per ha / Actual yield.

  Thereby, the payment per ha in each member state is calculated by dividing the available budget for decoupled payments by the total eligible area. That is, decoupled payments in ESIM are generally modelled as a uniform regionalised payment per hectare irrespective for which type of the SFP a member state has opted. The SFP, which is based on actual receipts by each farmer in the reference period 2000 to 2002, can not be modelled in ESIM.

Under Agenda 2000 the maximum voluntary set-aside was restricted to 30 % of total arable land per farm. For this study this upper bound is modelled as a “quota” assuming a shadow price of 65% of the set-aside premium.

Feed demand is modelled for 15 feed components plus silage maize, grass, and other fodder. Product-specific feed demand per unit of animal output is isoelastic, homogeneous of degree zero in the prices of all feed products, locally symmetric, and the possibility to substitute roughages for other feed components exists. Total product-specific feed demand in a country is the product of feed demand per unit of animal output. An exogenous additive intercept which represents feed demand of animals not covered in ESIM is also included to guarantee market clearing for feed demand and supply.

Based on this approach the endogenous animal product-specific FCI reflects relative changes in feed prices. Thus, an increasing price for any feed component results in reduced demand for this component due to two effects. First, the substitution effect, in which other components are substituted for the more expensive one, and second, the output effect, which results in an increasing FCI, in lower animal production, and therefore lower feed demand.

Certain parameters are considered crucial in simulating the impact of decoupling direct payments for ruminants as well as crops on area distribution. First, results of former sensitivity analyses reveal that own price and feed cost elasticities of ruminants, own and cross price elasticities of area allocation, and the own and cross price elasticities of feed demand with emphasis on the substitution possibilities between roughages and other feed components have the most important rule.[3] Area allocation elasticities in ESIM are very low for pasture and voluntary set-aside area compared to other crops. This is because pasture is modelled as permanent pasture and the substitution for crop land is limited due to different soil qualities and geographical/climatic conditions. The same holds for voluntary set-aside, which is generally marginal land. Supply elasticities for ruminants are about 1. Elasticities for milk are irrelevant due to the binding milk quota under all scenarios presented below. Allen-elasticities of substitution are such that roughages are a significantly less suitable substitute for oilmeals or cereals than products within the respective groups. Also the substitutability within the group of roughages is considered relatively low mainly due to feeding technology (grazing/nongrazing)[4].

[3] See Balkhausen et al. (2005).

[4] More detailed information on ESIM and the parameters used can be obtained from Deliverable 12 (Balkhausen and Banse, 2005) of the IDEMA project and from Banse et al. (2005).

4 Analysis with ESIM

4.1 Scenario description

For an assessment of decoupled payments with ESIM three scenarios are formulated and results for individual member countries of the enlarged EU are compared for the projection year 2013. All scenarios include the accession of the 10 NMS in 2004 and the accession of Bulgaria and Romania in 2007. The "rest of the world" component is calibrated such that FAPRI world market price projections (FAPRI, 2004) for 2013 are met. The three scenarios include:

1. A BASELINE scenario with full implementation of the MTR reform but coupled direct payments in the old and new member states of the EU. In the NMS, however, direct payments are phased in according to the phasing-in levels referred to above.

2. An ACTUAL IMPLEMENTATION scenario including (partially) decoupled payments in each member state. Direct payments and national top-ups are fully or partially decoupled depending on the actual implementation of the MTR reform (see Table 2).

3. A FULL DECOUPLING scenario with fully decoupled direct payments and national top-ups in each member state.

4.2 Results

Table 3 depicts direct payments per ha and per ton for all scenarios described above, respectively. Values for members of the EU-15 are depicted in Euro, while those for the NMS are displayed in national currencies. The assumptions on exchange rates applied are shown in the Annex. Moreover, direct payments are depicted in real terms. The assumed inflation rate amounts to 1.5 %. In Table 4 ESIM results of the ACTUAL IMPLEMENTATION scenario and the FULL DECOUPLING scenario are expressed as a percentage change relative to the BASELINE scenario. Both tables depict the figures for each member state of the enlarged EU individually.

Table 3: Direct payments per ha in 2013 under various scenarios (in € for members of the EU-15, in national currencies for the NMS)

	Cereals and oilseeds			Beef (payments per ton)			Sheep (payments per ton)			Set-aside		
	BASE	ACTUAL	FULL	BASE	ACTUAL	FULL	BASE	ACTUAL	FULL	BASE	ACTUAL	FULL
Germany	256.42	323.32	323.32	530.72	0.00	0.00	1151.31	0.00	0.00	256.05	323.32	323.32
Austria	269.58	154.66	173.81	530.72	260.59	0.00	1151.31	0.00	0.00	266.68	154.66	173.81
Belgium/Luxembourg	309.68	264.12	325.48	530.72	268.55	0.00	1151.31	0.00	0.00	309.69	264.13	325.49
Denmark	264.16	293.42	303.67	530.72	150.20	0.00	1151.31	575.66	0.00	264.15	293.42	303.66
Finland	142.70	157.25	169.20	530.72	271.20	0.00	1151.31	575.66	0.00	142.70	154.26	169.20
France	315.08	257.90	246.09	530.72	356.65	0.00	1151.31	575.66	0.00	304.63	183.14	246.08
Greece	224.96	125.73	112.87	530.72	53.07	0.00	1151.31	57.57	0.00	171.54	103.65	112.88
Ireland	307.66	191.05	191.05	530.72	0.00	0.00	1151.31	0.00	0.00	307.66	191.06	191.06
Italy	237.22	180.29	174.70	530.72	42.46	0.00	1151.31	57.57	0.00	197.35	163.96	174.69
Netherlands	337.00	326.02	426.26	530.72	406.53	0.00	1151.31	0.00	0.00	337.01	326.03	426.26
Portugal	157.21	78.70	94.59	530.72	324.27	0.00	1151.31	587.17	0.00	146.75	77.14	94.60
Spain	165.72	97.86	88.29	530.72	359.30	0.00	1151.31	575.66	0.00	146.75	63.95	88.28
Sweden	203.42	177.90	186.54	530.72	151.79	0.00	1151.31	0.00	0.00	203.42	177.90	186.54
United Kingdom	295.39	166.27	166.52	530.72	5.03	0.00	1151.31	0.00	0.00	295.01	166.28	166.52
Latvia	70.01	24.26	19.82	293.73	74.90	0.00	637.20	172.68	0.00			
Romania	43.53	29.20	28.42	172.20	43.91	0.00	373.55	101.23	0.00			
Slovenia	625.27	360.38	353.12	1244.40	317.32	0.00	2699.51	731.57	0.00			
Lituania	450.23	239.50	219.92	1748.93	445.98	0.00	3794.00	1028.17	0.00			
Bulgaria	298.34	242.01	246.17	1073.39	273.71	0.00	2328.51	631.03	0.00			
Poland	557.82	418.13	405.89	1950.15	497.29	0.00	4230.49	1146.46	0.00			
Hungary	553.99	316.00	293.52	1228.31	313.22	0.00	2664.59	722.11	0.00			
Czech Republic	62.36	45.31	44.11	155.73	39.71	0.00	337.83	91.55	0.00			
Slovakia	83.66	45.53	42.10	215.84	55.04	0.00	468.23	126.89	0.00			
Estonia	18.10	11.04	10.30	79.10	20.17	0.00	171.60	46.50	0.00			
Cyprus	79.32	104.49	115.08	316.80	80.79	0.00	687.25	186.25	0.00			
Malta	51.53	135.10	143.96	225.17	57.42	0.00	488.47	132.38	0.00			

Table 3: Direct payments per ha in 2013 under various scenarios (in € for EU-15 members, in national currencies for NMS) – cont.

	Silage maize			Fodder			Grassland		
	BASE	ACTUAL	FULL	BASE	ACTUAL	FULL	BASE	ACTUAL	FULL
Germany	230.45	323.32	323.31	0.00	323.33	323.32	0.00	323.32	323.33
Austria	240.00	154.65	173.81	0.00	154.66	173.82	0.00	154.65	173.84
Belgium/Luxembourg	278.73	264.13	325.49	0.00	264.14	325.48	0.00	264.14	325.49
Denmark	237.72	293.43	303.65	0.00	293.42	303.65	0.00	293.40	303.65
Finland				0.00	154.26	169.20	0.00	154.26	169.17
France	274.17	251.68	246.08	0.00	183.14	246.09	0.00	183.14	246.09
Greece	154.39	119.10	112.88	0.00	103.65	112.87	0.00	103.64	112.92
Ireland	276.91	191.06	191.06	0.00	191.06	191.06	0.00	191.10	191.00
Italy	177.62	176.40	174.69	0.00	163.96	174.69	0.00	163.99	174.66
Netherlands	303.31	326.04	426.25	0.00	326.02	426.27	0.00	325.99	426.23
Portugal	132.06	78.46	94.60	0.00	77.13	94.61	0.00	77.13	94.62
Spain	132.08	96.96	88.28	0.00	63.95	88.28	0.00	63.92	88.29
Sweden				0.00	177.90	186.55	0.00	177.90	186.53
United Kingdom	265.51	166.28	166.53	0.00	166.27	166.52	0.00	166.32	166.55
Latvia	63.02	23.65	19.82	0.00	18.10	19.82	0.00	18.10	19.83
Romania	39.15	28.80	28.42	0.00	25.35	28.42	0.00	25.36	28.42
Slovenia	562.73	354.88	353.13	0.00	305.36	353.12	0.00	305.32	353.15
Lituania	405.21	235.54	219.95	0.00	199.85	219.93	0.00	199.87	219.89
Bulgaria	267.11	238.04	246.17	0.00	214.52	246.19	0.00	214.54	246.19
Poland	502.03	413.22	405.87	0.00	369.07	405.90	0.00	369.01	405.82
Hungary	498.55	310.51	293.49	0.00	266.63	293.55	0.00	266.64	293.52
Czech Republic	56.13	44.76	44.11	0.00	39.82	44.12	0.00	39.81	44.11
Slovakia	75.20	44.53	42.11	0.00	37.91	42.10	0.00	37.92	42.10
Estonia	16.29	10.88	10.29	0.00	9.44	10.30	0.00	9.44	10.30
Cyprus	65.24	99.52	115.06	0.00	93.79	115.07	0.00	93.77	115.08
Malta				0.00	130.57	143.96	0.00	130.57	143.95

Table 4: ESIM results under various decoupling scenarios compared to coupled payments in 2013 in %

	Austria		Belgium/Luxembourg		Denmark		Finland		France	
	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL
Supply										
Beef	0.09	-5.32	-0.40	-5.61	0.19	-1.36	3.23	-3.33	5.17	-1.88
Sheep	-19.31	-9.88	-20.21	-10.53	11.42	-5.42	6.96	-7.75	3.70	-6.09
Milk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non ruminants	0.22	0.57	1.43	1.83	1.07	1.48	0.50	0.85	1.06	1.49
Area										
Grandes Cultures	-14.15	-14.64	-11.69	-12.57	-7.08	-7.07	-3.92	-3.52	-8.27	-9.93
Cereals	-13.86	-14.39	-11.98	-13.29	-7.12	-7.13	-4.34	-4.04	-8.14	-9.51
Oilseeds	-19.44	-19.30	-13.81	-12.73	-9.55	-9.24	-7.46	-6.19	-9.49	-11.20
Silage maize	-16.22	-17.87	-11.20	-11.35	-9.37	-9.43			-8.88	-13.90
Set-aside	-2.90	-1.68	-1.40	-3.70	4.08	4.45	4.15	5.18	-2.83	-0.51
Arable fodder	19.18	18.84	29.64	31.85	18.60	18.59	8.81	8.04	18.86	22.99
Grass	4.88	5.21	3.40	3.89	4.20	4.27	5.36	5.65	3.64	4.55
Incentive price										
Beef	-2.32	-8.88	-1.98	-8.88	-7.00	-8.88	-1.87	-8.88	1.75	-8.88
Sheep	-18.64	-13.51	-18.64	-13.51	-0.94	-13.51	-0.94	-13.51	-0.94	-13.51
Non ruminants	2.02	2.29	2.02	2.29	2.02	2.29	2.02	2.29	2.03	2.28
Cereals and oilseeds	-8.94	-6.58	0.00	5.13	6.40	7.78	7.02	9.89	-2.02	-2.70
Silage maize	-7.55	-7.61	0.85	5.94	5.94	6.82			-2.05	-7.65
Arable fodder	48.99	53.00	70.61	86.65	49.33	50.91	25.36	26.30	41.99	51.23
Grass	173.46	189.79	125.15	147.53	135.81	139.48	206.97	223.52	117.35	148.00
Producer price										
Beef	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59
Sheep	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87
Non ruminants	2.02	2.29	2.02	2.29	2.02	2.29	2.02	2.29	2.03	2.28
Cereals and oilseeds	5.48	5.93	4.89	5.29	4.69	5.08	5.93	6.40	4.86	5.29
Arable fodder	-22.11	-27.36	-27.03	-34.77	-31.76	-33.14	-19.81	-23.42	-19.86	-33.09
Grass	-14.05	-21.20	-9.80	-19.20	-21.46	-23.34	-18.89	-24.45	-10.03	-23.55

Table 4: ESIM results under various decoupling scenarios compared to coupled payments in 2013 in % (continued)

	Germany		Greece		Ireland		Italy		Netherlands	
	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL
Supply										
Beef	-8.75	-4.74	-7.34	-5.66	-11.84	-8.13	-6.79	-4.21	4.11	-8.65
Sheep	-14.71	-9.55	-17.26	-13.16	-18.60	-14.05	-12.42	-8.55	-22.90	-14.70
Milk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non ruminants	0.77	1.08	-0.30	-0.17	3.37	3.26	0.40	0.65	0.04	0.08
Area										
Grandes Cultures	-4.03	-4.15	-2.86	-3.55	-59.28	-59.77	-11.71	-12.75	-19.97	-22.21
Cereals	-4.43	-4.64	-2.87	-3.60	-60.87	-61.42	-11.92	-13.05	-22.61	-25.48
Oilseeds	-3.47	-3.83	-1.22	-1.65	-68.01	-68.55	-10.44	-11.47	-25.86	-26.00
Silage maize	-4.91	-4.09	-7.93	-7.66	-52.73	-52.26	-12.64	-12.53	-17.14	-18.71
Set-aside	5.68	5.65	-2.09	-1.06	-3.39	-3.44	-2.61	-1.32	-0.28	1.15
Arable fodder	17.84	18.71	5.12	7.98	-30.44	-29.97	8.18	10.04	27.86	31.53
Grass	3.73	3.81	7.93	8.53	7.45	7.47	8.45	8.86	8.17	9.27
Incentive price										
Beef	-13.37	-8.88	-11.12	-8.88	-13.37	-8.88	-11.57	-8.88	3.87	-8.88
Sheep	-18.64	-13.51	-16.87	-13.51	-18.64	-13.51	-16.87	-13.51	-18.64	-13.51
Non ruminants	2.02	2.29	2.03	2.29	1.99	2.27	2.03	2.29	2.07	2.34
Cereals and oilseeds	9.94	10.20	-14.98	-17.10	-6.92	-6.61	-6.44	-7.07	2.67	10.79
Silage maize	7.00	8.73	-14.20	-14.37	49.76	55.34	-4.51	-3.22	19.35	29.92
Arable fodder	46.88	49.31	-8.63	-7.31	126.15	133.85	21.61	25.46	121.25	160.75
Grass	130.44	133.98	334.08	369.52	371.11	376.51	377.10	405.47	283.93	366.18
Producer price										
Beef	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59
Sheep	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87
Non ruminants	2.02	2.29	2.03	2.29	1.99	2.27	2.03	2.29	2.07	2.34
Cereals and oilseeds	4.47	4.84	7.27	7.63	5.63	6.07	6.11	6.51	4.89	5.23
Arable fodder	-30.93	-28.25	-33.88	-34.84	30.59	38.76	-28.36	-27.74	-28.07	-36.44
Grass	-23.40	-19.76	-45.63	-43.81	-26.20	-20.38	-31.82	-30.06	-10.57	-19.43

Table 4: ESIM results under various decoupling scenarios compared to coupled payments in 2013 in % (continued)

	Portugal		Spain		Sweden		United Kingdom	
	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL
Supply								
Beef	-0.70	-9.69	2.25	-6.63	-0.15	-2.03	-9.85	-6.11
Sheep	-1.94	-17.02	-0.20	-12.54	-11.73	-3.87	-16.98	-11.55
Milk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non ruminants	0.88	1.31	0.34	0.72	0.01	0.31	1.49	1.71
Area								
Grandes Cultures	-3.85	-4.06	-6.65	-7.41	-18.13	-18.51	-16.40	-16.71
Cereals	-3.72	-3.91	-6.45	-7.46	-19.93	-20.41	-16.66	-17.03
Oilseeds	-10.92	-9.14	-8.97	-10.88	-25.43	-25.67	-21.27	-21.62
Silage maize	-1.87	-4.00	-5.10	-10.54			-21.39	-20.55
Set-aside	-3.23	-1.07	-5.95	-2.37	-1.28	0.15	-3.58	-3.58
Arable fodder	8.14	9.19	5.86	2.98	27.74	28.39	11.19	12.23
Grass	5.88	7.03	5.52	6.82	5.95	6.13	10.16	10.20
Incentive price								
Beef	0.38	-8.88	1.87	-8.88	-6.93	-8.88	-13.16	-8.88
Sheep	-0.59	-13.51	-0.94	-13.51	-18.64	-13.51	-18.64	-13.51
Non ruminants	2.03	2.28	2.02	2.29	2.04	2.31	2.04	2.29
Cereals and oilseeds	-13.91	-10.42	-11.13	-12.35	-0.16	1.32	-9.00	-8.71
Silage maize	-6.72	-6.61	-2.16	-9.00			-10.94	-8.95
Arable fodder	1.08	6.73	9.82	5.67	93.69	99.19	40.69	43.89
Grass	648.31	801.16	195.45	257.40	244.42	256.45	474.37	479.15
Producer price								
Beef	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59
Sheep	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87
Non ruminants	2.03	2.28	2.02	2.29	2.04	2.31	2.04	2.29
Cereals and oilseeds	6.83	7.35	5.50	6.09	4.98	5.37	4.33	4.70
Arable fodder	-47.79	-53.81	-10.09	-22.14	-42.70	-44.12	-34.30	-30.90
Grass	-55.59	-64.90	-11.78	-29.57	-35.21	-36.88	-38.58	-34.03

Table 4: ESIM results under various decoupling scenarios compared to coupled payments in 2013 in % (continued)

	Latvia		Romania		Slovenia		Lituania		Bulgaria	
	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL
Supply										
Beef	-5.10	-6.15	-4.62	-5.50	-6.78	-8.04	-3.98	-4.94	-4.52	-5.16
Sheep	-4.35	-8.86	-2.91	-7.04	-3.94	-9.48	-1.56	-5.98	-3.96	-7.98
Milk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non ruminants	1.89	2.28	-2.04	-2.12	-0.17	-0.02	-0.96	-0.89	1.10	1.48
Area										
Grandes Cultures	-5.41	-5.83	-8.64	-9.43	-22.78	-25.47	-8.97	-9.77	-9.95	-11.03
Cereals	-5.24	-5.65	-7.60	-8.33	-22.72	-25.45	-8.42	-9.18	-9.00	-10.19
Oilseeds	-10.73	-11.58	-13.33	-14.37	-28.45	-31.18	-16.32	-17.72	-13.16	-13.85
Silage maize	-8.49	-9.42	-13.36	-14.48	-22.74	-25.22	-12.27	-13.50	-10.06	-11.11
Set-aside										
Arable fodder	1.76	1.87	9.23	9.98	-1.76	-2.66	7.58	8.26	15.83	17.81
Grass	3.52	3.79	10.60	11.58	11.81	13.27	6.97	7.57	15.21	16.85
Incentive price										
Beef	-8.66	-10.27	-8.72	-10.36	-8.72	-10.36	-8.66	-10.27	-8.72	-10.36
Sheep	-10.81	-15.89	-10.81	-15.89	-10.81	-15.89	-10.81	-15.89	-10.81	-15.89
Non ruminants	1.99	2.26	2.01	2.27	2.04	2.29	2.04	2.31	1.99	2.25
Cereals and oilseeds	-18.63	-20.45	-7.54	-7.84	-6.31	-6.22	-11.44	-12.52	-3.93	-3.35
Silage maize	-19.88	-22.10	-12.94	-13.72	-4.25	-3.46	-12.13	-13.54	-3.84	-3.25
Arable fodder	-1.69	-2.32	17.60	19.60	33.84	39.34	25.46	27.98	36.03	42.27
Grass	18.97	20.38	69.44	77.76	83.28	97.34	43.77	48.18	108.44	125.49
Producer price										
Beef	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59
Sheep	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87
Non ruminants	1.99	2.26	2.01	2.27	2.04	2.29	2.04	2.31	1.99	2.25
Cereals and oilseeds	4.70	5.09	4.71	5.13	6.33	6.87	4.43	4.79	4.29	4.69
Arable fodder	-11.73	-13.34	-25.46	-28.94	-11.76	-13.50	-20.43	-22.66	-36.71	-42.12
Grass	-15.30	-17.21	-28.97	-32.94	-27.48	-31.16	-22.76	-25.18	-38.10	-43.68

Table 4: ESIM results under various decoupling scenarios compared to coupled payments in 2013 in % (continued)

	Poland		Hungary		Czech Republic		Slovakia		Estonia	
	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL	ACTUAL	FULL
Supply										
Beef	-4.97	-6.04	0.02	-0.49	1.59	1.25	0.37	-0.05	-4.48	-5.51
Sheep	-4.12	-8.54	6.76	2.99	9.03	5.47	6.35	2.68	1.28	-3.41
Milk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-2.51	-2.31
Non ruminants	-0.05	0.06	-1.19	-1.14	-0.72	-0.57	-0.12	0.09	-0.81	-0.74
Area										
Grandes Cultures	-3.83	-4.17	-9.50	-10.44	-9.72	-10.61	-11.50	-12.54	-9.41	-10.34
Cereals	-3.74	-4.06	-7.91	-8.73	-8.55	-9.35	-10.05	-11.00	-9.13	-10.04
Oilseeds	-4.89	-5.29	-15.93	-17.34	-12.39	-13.42	-15.43	-16.62	-12.16	-13.33
Silage maize	-5.64	-6.29	-18.27	-20.11	-12.92	-14.20	-15.85	-17.34	-11.37	-12.37
Set-aside										
Arable fodder	10.93	12.03	29.38	32.81	11.94	13.18	7.78	8.70	8.53	9.43
Grass	7.71	8.35	16.61	17.96	15.28	16.56	15.69	17.07	7.46	8.11
Incentive price										
Beef	-8.66	-10.27	-8.66	-10.27	-8.66	-10.27	-8.66	-10.27	-8.66	-10.27
Sheep	-10.81	-15.89	-10.81	-15.89	-10.81	-15.89	-10.81	-15.89	-10.81	-15.89
Non ruminants	2.02	2.29	2.02	2.27	2.02	2.28	2.03	2.29	2.02	2.28
Cereals and oilseeds	-4.76	-5.20	-11.96	-13.17	-6.26	-6.64	-14.06	-15.48	-11.73	-13.02
Silage maize	-6.33	-7.18	-21.81	-24.01	-12.98	-14.22	-21.78	-23.88	-12.21	-13.37
Arable fodder	19.91	21.95	44.22	49.60	32.43	36.34	19.13	21.24	24.10	26.71
Grass	54.76	60.30	116.28	128.80	114.95	128.27	107.68	120.32	48.96	54.01
Producer price										
Beef	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59	11.79	17.59
Sheep	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87	25.93	33.87
Non ruminants	2.02	2.29	2.02	2.27	2.02	2.28	2.03	2.29	2.02	2.28
Cereals and oilseeds	4.67	5.05	5.26	5.70	4.06	4.41	4.38	4.73	4.77	5.14
Arable fodder	-21.64	-23.89	-39.18	-42.92	-28.01	-30.90	-23.71	-26.52	-24.67	-26.60
Grass	-24.19	-26.59	-36.27	-39.72	-31.42	-34.34	-29.77	-32.75	-27.28	-29.24

Table 4: ESIM results under various decoupling scenarios compared to coupled payments in 2013 in % (continued)

	Cyprus		Malta	
	ACTUAL	FULL	ACTUAL	FULL
Supply				
Beef	-8.32	-9.44	-7.58	-8.98
Sheep	-11.69	-16.71	-7.14	-14.29
Milk	-3.93	-3.63	-2.91	-2.77
Non ruminants	0.07	0.33	-1.27	-1.22
Area				
Grandes Cultures	-0.28	-0.29	-21.44	-23.05
Cereals	-0.28	-0.29	-21.44	-23.05
Oilseeds				
Silage maize	-1.54	0.00		
Set-aside				
Arable fodder	37.11	46.39	16.47	17.81
Grass	22.09	25.20	33.74	35.60
Incentive price				
Beef	-8.72	-10.36	-8.72	-10.36
Sheep	-10.81	-15.89	-10.81	-15.89
Non ruminants	2.02	2.28	2.01	2.28
Cereals and oilseeds	15.78	20.44	30.74	33.91
Silage maize	8.00	11.81		
Arable fodder	70.87	90.61	107.77	120.88
Grass	203.42	252.75	478.96	533.30
Producer price				
Beef	11.79	17.59	11.79	17.59
Sheep	25.93	33.87	25.93	33.87
Non ruminants	2.02	2.28	2.01	2.28
Cereals and oilseeds	6.53	6.56	4.36	4.74
Arable fodder	-37.79	-44.59	-35.25	-37.46
Grass	-31.33	-36.78	-54.04	-55.98

4.2.1 ACTUAL IMPLEMENTATION scenario

- ***Direct payments***

Table 3 shows that direct payments differ significantly among member states as well as among products and product categories, respectively. Apart from different currencies among the NMS there are also other reasons for these differences. In case of crops, one reason are varying projected actual yield and base yield levels among countries. Direct payments per ha are calculated by a yield component multiplied by the premium per ton. Differences in direct payment levels for silage maize on the one hand and COP products on the other hand can additionally be traced back to different levels in the coupled premium per ton under Agenda 2000.

In case of the ACTUAL IMPLEMENTATION scenario, differences in direct payments among countries and products also arise from different coupling rates. In those member states of the old EU-15, where a part of direct payments is kept coupled to production, the available budget for direct payments is not completely allocated to an uniform regionalised payment. That is, the maximum possible amount of the flat rate payment is only paid in Germany (323 €/ha) and Ireland (191 €/ha). According to the full decoupling approach, however, payments to ruminant producers are abolished in both countries.

After the SAPS scheme expired in 2009 the level of direct payments in NMS is based on the average coupling rates applied in the EU-15. Therefore, under the ACTUAL IMPLEMENTATION scenario also direct payments in the NMS are partly coupled from 2009 on, whereby the coupling rate applied is the same in each of the NMS.

In the NMS, Austria, Belgium, the Netherlands, Sweden, and the United Kingdom payments for beef remain coupled to production to different degrees. In the NMS, Denmark, Finland, France, Greece, Italy, Portugal, and Spain both beef and sheep meat payments are kept partly linked to production. Accordingly, farmers in these countries still receive direct payments for beef and/or sheep meat production on the expense of a higher budget allocated to the regionalised payment.

In those countries, where the payments for COP products are partly linked to production the payment per ha is higher for COP than for set-aside and those products, which were not eligible for direct payments before the MTR was implemented (grass and fodder). Apart from the NMS, this is particularly true for France and Spain and to a minor degree for Finland, Greece, and Italy. In France and Spain, for example, payments for COP products amount to

258 € and 98 € per ha, respectively, while the payments for each grass, fodder, and set-aside amount to 183 € and 64 € per ha, respectively. In those member states, where COP payments are fully decoupled, direct payments for arable crops, fodder, grass, set-aside area, and silage maize have the same level.

- ***Arable fodder and grass***

In all countries of the enlarged EU the introduction of direct payments for pasture results in higher incentive prices and higher pasture area (see Table 4). In the old member states this area increase lies between 3.4 % in Belgium/Luxembourg and 10.2 % in the United Kingdom, while it differs between 3.5 % (Latvia) and 16.6 % (Hungary) in the NMS. Apart from Ireland and Slovenia also fodder area is increasing across EU members. Regarding the old members states, growth rates lie between 5.1 % in Greece and 29.6 % in Belgium/Luxembourg. In Greece, fodder area is even increasing in face of declining incentive prices, which can be explained by even stronger decreases in incentive prices for other crops and the resulting cross price effects. For the NMS the increase differs between 1.8 % in Latvia and 29.4 % in Hungary. In Ireland and Slovenia, fodder area is decreasing. This can be explained as follows: Fodder prices are relatively increasing compared to those of grass, which leads to a substitution of grass for fodder in the feed ratio of ruminants. This effect even overcompensates the fodder area increasing effect of higher incentive prices. Thus, because both products are non tradables, fodder supply and area decrease.

- ***Grandes cultures***

The increase in fodder and/or pasture area offsets the decrease in grandes cultures area, which occurs in all members of the enlarged EU and lies between 0.3 % in Cyprus and 59.3 % in Ireland. However, in all countries apart from Ireland decrease rates are below 20.0 %. The reason for the area shift from cereals and oilseeds towards fodder and grass is the relative decrease in incentive prices of cereals and oilseeds compared to those of grass and fodder resulting from the introduction of direct payments for the latter products. Thereby, the absolute change in incentive prices does not equal the absolute change in direct payments since producer prices for cereals rise as a result of decreasing area and supply. In some members incentive prices for cereals and oilseeds rise in absolute terms (between 6.4 % in Denmark and 9.9 % in Germany) due to an increase in direct payments per ha after decoupling (Germany, Denmark, Finland, Cyprus, and Malta) or due to a compensation of lower direct payments by an increase in the producer price (Netherlands).

- ***Silage maize***

In those member states, which keep COP payments partly coupled to production to the maximum possible degree (France and Spain), silage maize area decreases like in all other countries. However, in contrast to all other countries this area decrease is by far lower than under the full decoupling approach (see FULL DECOUPLING scenario below). More specifically, silage maize area in France and Spain decreases by 8.9 % and 5.1 %, respectively, under the ACTUAL IMPLEMENTATION scenario, while it decreases by 13.9 % and 10.5 %, respectively, under the FULL DECOUPLING scenario. The weighted average decrease in the silage maize area in all other members of the EU-15 is 9.3 % under the ACTUAL IMPLEMENTATION scenario and even slightly lower under the FULL DECOUPLING scenario (9.2 %). In contrast to the full decoupling approach applied in other EU-15 member states direct payments for silage maize in France and Spain are still higher than for the substitutes grass and fodder. This leads to a relative benefit in silage maize production and, thus, to a significantly lower decrease in silage maize area than under the FULL DECOUPLING scenario. To a minor degree this is also true for the aggregate category of grandes cultures. Compared to those member states that fully decouple COP payments the difference in area decrease between the ACTUAL IMPLEMENTATION scenario and the FULL DECOUPLING scenario is on average slightly larger in members that partly couple their COP payments.

- ***Voluntary set-aside***

Voluntary set-aside area is only depicted for EU-15 members. It increases in Germany, Denmark, and Finland, resulting from higher relative incentive prices for set-aside when compared with the BASELINE scenario. In all other countries relative incentive prices change to the disadvantage of voluntary set-aside as a result of the equal distribution of direct payments over total area. Thus, voluntary set-aside area decreases. The strongest increase in set-aside area occurs in Germany (5.7 %), while the sharpest decrease takes place in Spain (6.0 %). The absolute increase of the regionalised payment in Germany, Denmark, and Finland can be explained by relatively low coupling rates in the ruminant sector and a comparatively low total area where the available budget for decoupled payments is distributed on.

- ***Beef and sheep meat production***

As mentioned above, the introduction of direct payments for fodder and pasture under the ACTUAL IMPLEMENTATION scenario has a positive effect on supply. This leads to a decline in prices and a lower FCI for ruminants. This, in turn, has a stimulating effect on ruminant

production. The decrease in direct payments for ruminants, however, has a negative effect on ruminant supply. The decrease in direct payments lies between 23.4 % (Netherlands) and 100 % (Germany and Ireland) in case of beef and between 49.0 % (Portugal) and 100 % (Austria, Germany, Belgium/Luxembourg, Ireland, Netherlands, Sweden, and United Kingdom) in case of sheep meat. In those countries, which have decoupled ruminant payments to a large extent or even completely (Germany, Greece, Ireland, Italy, and United Kingdom), incentive prices decrease strongly so that the negative effect of decreasing direct payments dominates the supply effect, i.e. ruminant supply is decreasing. Due to the lower ruminant production on the aggregated EU-15 level producer prices on EU-15 level increase and producers are (partly) compensated for the decreases in direct payments for ruminants. In some of those member states, which keep their beef payments coupled to production to a large extent, this increase in producer prices even overcompensates the reductions in direct payments so that incentive prices increase (France, Netherlands, Portugal, and Spain). In the end, beef and/or sheep meat production increases in those countries, where the supply decreasing effect of lower direct payments is offset by the production stimulating effect of lower fodder/grass prices and higher producer prices for ruminants. This is true in almost all EU-15 members that have kept larger parts of ruminant payments coupled to production and for those NMS, where the decrease in prices for fodder dominates the beef and sheep meat supply. In detail, beef production increases in Austria, Denmark, Finland, France, the Netherlands, Spain, Hungary, the Czech Republic, and Slovakia. Sheep meat supply rises in Denmark, Finland, France, Hungary, the Czech Republic, Slovakia, and Estonia.

- ***Milk and non–ruminant production***

Apart from Cyprus and Malta, the production of milk does not change at all among scenarios. This reflects the binding milk quota. Compared to the results for beef and sheep meat, incentive prices and supply of non ruminants change only slightly across members of the enlarged EU. That is, incentive prices increase uniformly by about 2 % and supply changes vary between -2.0 % in Romania and +3.4 % in Ireland. This is no surprise as pork and poultry production is neither directly affected by decoupling nor by other MTR reforms, but only indirectly via cross effects from other products mostly through changing feed prices.

4.2.2 FULL DECOUPLING scenario

- ***Direct payments***

As shown in Table 3 direct payments for cereals and oilseeds, set-aside, silage maize, fodder and grassland have the same level under the FULL DECOUPLING scenario. Payments for

ruminants are completely abolished. Of course, variations of direct payments among countries still occur due to differences in yield and base yield levels and/or currencies.

Compared to the ACTUAL IMPLEMENTATION scenario direct payments for cereals and oilseeds as well as silage maize increase in those countries, which have (almost) completely decoupled COP payments under the ACTUAL IMPLEMENTATION scenario while payments for beef and/or sheep meat have remained partly coupled. With respect to members of the EU-15 this is true for Austria, Belgium/Luxembourg, Denmark, Finland, the Netherlands, Portugal, Sweden, and the United Kingdom. In these countries, the financial resources, which have been used to finance the payments for ruminant producers under the ACTUAL IMPLEMENTATION scenario, is now reallocated to the uniform regionalised payment, which accordingly increases. In Bulgaria, Cyprus, and Malta cereal and oilseeds payments and in case of Bulgaria and Cyprus also silage maize payments increase. The reason for this increase is most possible that comparatively high funds for coupled payments are now redistributed over a comparatively low total area.

A decrease of direct payments for cereals and oilseeds and silage maize under the FULL DECOUPLING scenario occurs, wherever COP payments have been coupled to production to a relatively high degree before. This is the case in France, Greece, Italy, Spain, and in most NMS. In these countries, funds for coupled COP payments under the ACTUAL IMPLEMENTATION scenario are now evenly distributed over all hectares. The level of payments remains the same in those countries, which have applied the full decoupling approach under the ACTUAL IMPLEMENTATION scenario already (Germany and Ireland).

Compared to the ACTUAL IMPLEMENTATION scenario, direct payments for set-aside, fodder, and grass increase across all countries (apart from Germany and Ireland) under the FULL DECOUPLING scenario, since funds, which have been used to finance the coupled payments for both COP and ruminant production before, are now paid uniformly for all area uses depicted in Table 3.

- ***Beef and sheep meat production***

Apart from the Czech Republic, Hungary, and Slovakia, the production of both beef and sheep meat under the FULL DECOUPLING scenario is lower than under the BASELINE scenario in all countries across the enlarged EU. The largest decrease in beef supply occurs in Portugal (9.7 %) followed by the Netherlands (8.7 %). Sheep meat supply is decreasing most strongly in Cyprus (16.7 %) and the Netherlands (14.7 %). This decrease takes place as a result of the

elimination of direct payments, which can be offset neither by decreasing costs for the most important feed components fodder and grass (see below) nor by increasing producer prices for ruminants. The only member states, where a compensation of lower direct payments by lower feed costs and higher producer prices for beef and/or sheep meat takes place, are the Czech Republic, Slovakia, and Hungary. Accordingly, sheep meat production increases by 3.0 %, 5.5 %, and 6.4 %, respectively. Beef supply increases in the Czech Rebuplic only (+1.3 %)

Compared to the ACTUAL IMPLEMENTATION scenario, ruminant production under the FULL DECOUPLING scenario is lower in those countries, which keep their ruminant payments partly coupled under the ACTUAL IMPLEMENTATION scenario. In some countries beef and/or sheep meat supply is even increasing under the ACTUAL IMPLEMENTATION scenario as a result of relatively highly coupled payments and/or low costs for fodder and grass, while it is decreasing when payments are fully decoupled. For example, in France, the Netherlands, and Spain beef supply increases by 5.2 %, 4.1 %, and 2.3 % under the ACTUAL IMPLEMENTATION scenario, respectively. Under the FULL DECOUPLING scenario, however, beef supply decreases by 1.9 %, 8.7 %, and 6.6 %, respectively.

As a result of lower ruminant supply in the EU under the FULL DECOUPLING scenario, producer prices increase relatively to the BASELINE scenario (17.6 %) and also to the ACTUAL IMPLEMENTATION scenario (5.8 percentage points). This partly compensates ruminant producers for the elimination of direct payments. Therefore, incentive prices do not decline stronger than by 8.9 % (EU-15) and 10.3 % (NMS) in case of beef and by 13.5 % (EU-15) and 15.9 % (NMS) for sheep meat.

- ***Arable fodder and grass***

Fodder area and grassland increase more under the FULL DECOUPLING scenario than under the ACTUAL IMPLEMENTATION scenario in most countries of the enlarged EU. The differences in area growth rates between both scenarios are the largest in those countries, where direct payments increase strongly and accordingly relative incentive prices change to the advantage of fodder and grass (Belgium/Luxembourg, France, Netherlands, Portugal, Spain, and some NMS) or where ruminant supply and, thus, demand for fodder and/or grass are higher (mainly Greece and Italy). For example, in France and the Netherlands direct payments are coupled to production to a comparatively high degree under the ACTUAL IMPLEMENTATION scenario. Accordingly, payments for fodder and grass increase significantly under the FULL DECOUPLING scenario, i.e. by 34 % and 31 %, respectively. As a result, incentive prices increase and, thus, fodder and grass area increase. Thereby, the positive effect on incentive

prices that results from higher direct payments is stronger than the negative influence on by lower producer prices, which in turn result from the increase in production. In France (the Netherlands) increases in fodder and grass area amount to 18.9 % (27.9 %) and 3.6 % (8.2 %) under the ACTUAL IMPLEMENTATION scenario, respectively. Under the FULL DECOUPLING scenario these increases amount to 23.0 % (31.5 %) and 4.6 % (9.3 %), respectively.

- ***Grandes cultures***

The relative changes in grandes cultures area under the FULL DECOUPLING scenario do not differ much from those under the ACTUAL IMPLEMENTATION scenario in most member states. Compared to the BASELINE scenario, the grandes cultures area decreases by 0.3 % (Cyprus) to 59.8 % (Ireland). However, at least slight changes occur in those countries, where direct payments have been partly coupled to production under the ACTUAL IMPLEMENTATION scenario and are completely decoupled now so that incentive prices of cereals and oilseeds decrease relatively compared to those of grass and fodder. Accordingly, grandes cultures area in France, the Netherlands, and Slovenia decreases by 1.6, 2.2, and 2.7 percentage points under the FULL DECOUPLING scenario compared to the ACTUAL IMPLEMENTATION scenario.

- ***Silage maize***

In case of silage maize, it makes a difference for member states whether COP payments a kept partly coupled to production or not. That is, the decrease in silage maize is significantly stronger when countries apply the full decoupling approach than the partial decoupling. This can be illustrated when looking at the figures for those members, which keep COP payments partly coupled to production to the maximum possible degree under the ACTUAL IMPLEMENTATION scenario (France and Spain). As mentioned above, silage maize area in these countries decreases by 13.9 % and 10.5 % under the FULL DECOUPLING scenario, while it decreases by only 8.9 % and 5.1 % under the ACTUAL IMPLEMENTATION scenario, respectively. While direct payments for silage maize in France and Spain have been higher than for fodder and grass under the ACTUAL IMPLEMENTATION scenario, they are similar for these products under the FULL DECOUPLING scenario. Thus, in contrast to the ACTUAL IMPLEMENTATION scenario fodder and grass are now substituted for silage maize. This leads finally to an increase in fodder and grass area as well as to a decrease in silage maize area.

- ***Voluntary set-aside***

Compared to the BASELINE scenario voluntary set-aside area under the FULL DECOUPLING scenario increases in Denmark (4.5 %), Finland (5.2 %), Germany (5.7 %), the Netherlands (1.2 %), and Sweden (0.2 %). As in case of the ACTUAL IMPLEMENTATION scenario these

increases result from higher relative incentive prices for set-aside when compared with the BASELINE scenario, while relative incentive prices in all other countries change to the disadvantage of voluntary set-aside and, thus, lead to an area decrease. However, set-aside area under the FULL DECOUPLING scenario is higher than under the ACTUAL IMPLEMENTATION scenario across all countries since direct payments and accordingly relative incentive prices for set-aside increase in case of the full decoupling approach. In the Netherlands and Sweden, for example, set-aside area decreases under the ACTUAL IMPLEMENTATION scenario (by 0.3 % and 1.3 %, respectively), while it raises under the FULL DECOUPLING scenario (see above).

5 Summary and conclusions

The purpose of this paper was to describe and interpret the sectoral effects of decoupling on area allocation and production by using the partial equilibrium model ESIM. However, ESIM is not a suitable tool to conduct a farm level assessment. Therefore, the decoupling impacts on structural change, income distribution and efficiency are analysed by using the agent-based model AgriPolis within Workpackages 4 to 7 of the IDEMA project.

The simulation of decoupling effects on the farm-level is also part of the GENEDEC project. Here, various Linear Programming (LP) models are used. As a way of co-operation between IDEMA and GENEDEC, prices, which are obtained by the application of ESIM, will be provided to GENEDEC partners and fed into the LP models.

According to the ESIM results the choice of the policy has a significant influence on area allocation and production in EU member states. Thereby, this influence differs among products and countries. However, a general difference between decoupling effects in the NMS and those in the old member states does not exist for most agricultural sectors referred to in this paper. This is no surprise, since model results refer to the year 2013, in which the level of direct payments in the NMS has reached the EU-15 level (see Table 1). The first part of this final chapter summarises the simulation results analysed above and points out the main effects of different decoupling options on area allocation and production. After that an outlook on future research needs is given.

As shown in Table 2 only France and Spain use the possibility of keeping direct payments (partly) coupled to production for all product categories. In contrast, however, only Germany, Ireland, Greece, Italy, and the United Kingdom decided to decouple all payments (almost) completely. In Austria, Belgium/Luxembourg, Denmark, Finland, the Netherlands, Portugal and Sweden some of the payments for beef and/or sheep meat are kept (partly) coupled to

production. Apart from France and Spain, there is no member state, which couples payments for arable crops to production to the maximum degree allowed.

The simulation results show that decoupling leads to an area shift from grandes cultures towards grass and arable fodder, which have not been eligible for direct payments under Agenda 2000. This is true for all member states under both decoupling scenarios, whereby decrease rates do not differ much between partial and full decoupling. In other words, cereal and oilseed producers do not benefit heavily when COP payments are kept partly coupled to production. However, in the special case of silage maize, area decreases are much stronger when COP payments are fully decoupled than under the partial decoupling approach, which is applied in France and Spain. As explained above, when COP payments are partly coupled to production, payments for silage maize are higher than those for the substitutes grass and fodder. Accordingly, there is still a relative advantage in incentive prices for silage maize so that area decrease is lower than under the FULL DECOUPLING scenario.

Voluntary set-aside area is projected to decrease in all countries apart from Denmark, Finland, and Germany under both decoupling scenarios. This can be explained by the decrease in direct payments and thus incentive prices. However, area is higher under the FULL DECOUPLING scenario than the partial decoupling approach since funds, which have been allocated to coupled payments for ruminants and/or COP products before, are now evenly distributed over the total eligible area so that direct payments for set-aside are higher.

As illustrated under the ACTUAL IMPLEMENTATION scenario, the policy option of keeping beef and/or sheep meat payments (partly) coupled to production can even lead to an increase in beef and/or sheep meat production. Thus, beef producers in Finland, France, the Netherlands, and Spain, as well as sheep meat producers in Denmark, Finland, and France seem to benefit significantly from the MTR reform and the decoupling options chosen by their governments.

With respect to the NMS the economic situation for beef and sheep meat producers in the Czech Republic, Hungary, and Slovakia, and in case of sheep meat also Estonia is better under the MTR reform than in case of an introduction of completely coupled payments. In general, ruminant production under the ACTUAL IMPLEMENTATION scenario increases, where the supply decreasing effect of lower direct payments is offset by the production stimulating effect of lower fodder/grass prices and higher producer prices for ruminants.

Under the FULL DECOUPLING scenario, however, ruminant production decreases in (almost) all countries across the enlarged EU. This decrease takes place as a result of the elimination of

direct payments, which can not be offset by decreasing costs for the most important feed components fodder and grass.

Milk production does not change at all among scenarios. This reflects the binding milk quota. Compared to beef and sheep meat, incentive prices and supply of non ruminants change only slightly in the course of decoupling since products are not directly affected by the MTR reform.

In order to model effects of decoupling, products, which have not been eligible for direct payments under Agenda 2000, become more important, because relative incentive prices between these products and grandes cultures change considerably. In addition, significant changes in feed rations for ruminants can be expected. Model results with respect to the effects of decoupling always depend heavily on assumptions about the effectiveness of direct payments on production (under Agenda 2000 as well as the MTR). Empirical studies on the production effects of various forms of direct payments are still limited, especially as no historical precedents for certain kinds of direct payments exist. Therefore, current simulation models including ESIM tend to be based on rather rough ad hoc assumptions and the need for a better empirical foundation is obvious (Balkhausen et al., 2005).

Another aspect which has an impact on agricultural production but for which the empirical foundation is weak and ESIM results among EU member states are heterogeneous, is the response of voluntary set-aside to price and premium changes. For the first time, the MTR allows farmers to put the complete farm area into set-aside without losing decoupled premiums, which may result in discontinuous shifts because farmers can escape a large part of their fixed cost by ending agricultural production.

And finally, a feature which potentially drives model results to a large extent is the degree of own price response of pasture land and the substitutability of crop area for pasture land. Therefore and to identify the impact of other parameter levels on ESIM results, a sensitivity analysis will be conducted as one of the next steps within Workpackage 10 of the IDEMA project.

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7 Appendix

Exchange rates of national currencies in the new member states compared to Euro

(1 € = … national currency)

	Assumed rate	Today's rate
Bulgaria	2.02	1.95
Cyprus	0.60	0.57
Czech Republic	29.34	28.77
Estonia	14.90	15.65
Hungary	231.44	259.80
Latvia	0.55	0.69
Lithuania	3.30	3.45
Malta	0.42	0.43
Poland	3.67	3.90
Romania	32445.34	35014.00
Slovakia	40.67	37.50
Slovenia	234.47	239.30

Source: Own assumptions and Oanda (2006).