2030 European agricultural policy: A new CAP at a crossroad between market competitiveness and sustainability

Pierre Boulanger[1], Hasan Dudu[1], Emanuele Ferrari[1], Robert M'barek[1], George Philippidis[2]

1 Introduction

Over the past 50 years, the CAP has evolved radically, together with its main instruments from compensatory coupled subsidies to decoupled payments – conditioned to European and national statutory requirements. Challenges related to the agricultural sector are manifold, i.e. contributing to food security and an increased demand for various uses with finite resources in a changing climate. Against this background, the future design of the post-2020 CAP is under consultation and includes a wide range of policy options, from retaining the status quo to a radical reform.

Despite the current economic and financial climate, the agreed CAP budget over the period 2014-2020 strengthened strong public support to European agriculture with about 38% of the EU budget (i.e., about €400 billion) devoted to the CAP. The latest reform of the CAP took place in 2013 with a progressive implementation at member state levels over the period 2014-2020. It introduced new instruments (e.g., 30% of the direct payments envelope by member states have to be related to greening practices such as crop diversification or maintaining permanent pasture; voluntary re-coupling of former decoupled payments; etc.) and provided much more flexibility to member states in national implementations.

Using a multi-region neoclassical CGE framework, the contribution of the present paper is to explore different visions of a future CAP beyond 2020 in terms of agri-food products and factor markets, CAP budgetary effects and welfare. This research follows in the tradition of the Scenar2020 study (Nowicki, 2009). The first edition of Scenar2020 was framed under the slogan *Understanding Change*. The second report focussed on *Preparing for Change*. The present work, in a way CGE component of a third edition, could be seen under the heading of *Performing Real Change*. Employing the latest EU agricultural policy modelling developments and parameterisation, a well-founded and plausible reference scenario (*baseline*) is constructed, as well as two diametrically opposed future visions of the CAP (*market competiveness* vs. *competitive sustainability*). The paper is structured as follows. Section 2 presents the methodology. Section 3 shed some light on key results. Section 4 concludes.

[1] European Commission, Joint Research Centre (JRC)
[2] Aragonese Agency for Research and Development (ARAID) & Wageningen University and Research (WUR)

2 Methodology

The paper uses the Modular Applied GeNeral Equilibrium Tool (MAGNET), a global neoclassical CGE model, adopting a modular approach, whereby the standard Global Trade Analysis Project (GTAP)-based core has been augmented with various modules (Woltjer and Kuiper, 2014). It improves the representation of the CAP, fully capturing the allocation of CAP expenditures, using data from the Clearance Audit Trail System (CATS) which gathers details of all CAP payments made to the recipients of the EAGF (European Agricultural Guarantee Fund) and EAFRD (European Agricultural Fund for Rural Development). By contrast to existing studies using the CAP module of MAGNET (Boulanger and Philippidis, 2014, 2015; Philippidis, M'barek. and Ferrari, 2016), additional effort has been made to improve the model parameterisation. More specifically, updates have been inserted to improve the land use elasticities; the impact of second pillar expenditures on factor productivity; first pillar coupling factors and the quota fill and rent rates for member state sugar and milk quotas.

Baseline

The baseline includes the latest developments of the CAP; notably national implement of rural development programmes up to 2020 amounting to about €15 billion a year, and recoupling of support to specific activities amounting to about €4 billion a year. Integrating all national specialities within a common EU framework is nowadays key for any meaningful agri-food policy analysis. For the period 2020-2030, it is assumed that the CAP remains as in 2020.

The trade policies in the baseline follow the assumptions made in the DG AGRI market outlook 2015. In view of recent developments in climate change policies, the COP21 agreement is implemented following the latest official reference scenario of the European Commission for all sectors. In the model, there are 35 regions (all EU member states, and main trade partners) and 23 sectors. The model is run with four time periods (between five points in time), i.e. 2011-2016-2020-2025-2030.

With its economy-wide foundation, the CGE model is ideally placed to incorporate a plethora of different policy initiatives within a single coherent framework. Thus, in recognition of the fact that a holistic approach is a key ingredient for coherent policy making, as well as developments in EU agricultural policy; other relevant policy drivers are also taken into account. Two scenarios, taking polar paths against the reference scenario (*baseline*) to characterize different visions for the CAP are modelled.

Scenario 1: Market competitiveness

A first scenario (*Market competitiveness*) emphasises low cost farming in an open world. This scenario presents an EU agricultural policy which focuses on providing quality agricultural commodities and food in a globally competitive market. That way the EU becomes a key player in ensuring food and nutrition security in the world. The agricultural sector is seen as any other in that it should focus more on those products in which it is more competitive. As a consequence most EU agriculture specific policies are assumed to be abolished in 2030. The key policy areas under this scenario include:

- A strong reduction of EU agricultural policy.

- The abolishment of the direct payment scheme. This includes both the basic payment and the greening part of the payment.

• Coupled production support is abolished.

• No supply management of price support measures are foreseen. The markets should regulate themselves to assure equilibrium between demand and supply.

• The rural development program is drastically reduced. Some measures are maintained and other schemes complement the current system (e.g., support to young farmers, investment support to modernize the chain and realize economies of scale).

• To be globally competitive the EU takes a strong step towards liberalisation of its markets. Significant progress is made in bilateral trade agreements assuring increased market access for competitive products and access to cheap inputs and commodities.

• Climate policy is a reality by 2030. Binding GHG emission targets are set for the different economic sectors. However, the impact for EU agriculture might be moderate as some of the GHG intensive sectors (livestock) might decrease in this scenario while the modernisation of the sector assures the most efficient technologies are used.

Scenario 2: Competitive sustainability

A second scenario (*Competitive sustainability*) places greater emphasis on farmers striking a balance between public and private goods. It presents an agricultural policy which is consistent with the broader EU goal of a sustainable model of European economic growth to 2030. Within this policy vision the agricultural sector, as the primary sector taking care of the land and landscape, ensures the sustainable use of natural resources in rural landscapes and the provision of wider public goods to the society. Nevertheless, providing food and agricultural products continues to be a priority to assure food and nutrition security in the EU and abroad. Therefore, EU agricultural policy's main aim is to facilitate farmers to find a balance between the provision of public goods and ensuring farmers' income from the market. The key elements under this scenario include:

• The EU budget for agricultural policy kept at the current level.

• Basic direct payment is substantially reduced and the process of both internal and external convergence is continued.

• Additional direct payments can be provided to the farmer conditional on the compliance with more stringent requirements.

• Coupled support is minimized and is only justified if the production provides a specific public good (e.g., extensive livestock grazing to maintain grasslands in less productive areas).

• The reduction of direct payments and market measures allows a shift of budget towards programmed policies, i.e. the current rural development measures.

• Farmers in areas with high natural value or natural constraints receive an extra payment. Strong rural development support is given to agri-environmental and climate change measures, and investments in human and physical capital.

• Trade policies are held at a status quo.

• Given the EU's push toward a circular and sustainable economy the climate policy is stringent. This results in strong Greenhouse Gas (GHG) emission reduction targets for all economic sectors including agriculture.

• Biofuels based on agricultural products are not actively supported in this scenario.

3 Results and discussion

Results are presented in comparison with the baseline. The complexity of the CGE model framework renders a full discussion of all results as unwieldy. Therefore the focus is on welfare, output, prices and factor markets.

CAP budget and welfare impacts

Table 1 presents the revenues and costs corresponding to the CAP budget in the baseline for the year 2016. The last column of the first row shows total CAP receipts of €54,359 million accruing to the EU member states (€39,912 million EU15 and €14,447 million in EU13). This total is split between first and second pillars (second pillar figures exclude nationally co-financed support) amounting to €42,168 million and €12,016 million, respectively. Of the former, decoupled payments total €26,801 million, greening amounts to €11,322 million and remaining coupled payments sum to €4,045 million. Contributions to the CAP budget are financed by tariff revenues and a uniform EU-wide percentage of each member's gross domestic product (GDP). The rebate row in Table 1 accounts for the net impacts on EU members from both the UK rebate and additional corrective payments.

The 'net position' row shows that the 'old' EU15 (except Greece, Ireland, Portugal and Spain) are net contributors to the CAP budget, whilst the newer member states (as expected) are net beneficiaries. This observation underlies the redistributive nature of the CAP. A closer look reveals that France is the largest recipient of CAP funding, but makes significant payments to the CAP budget and the UK rebate whilst receiving no special dispensation.

On the basis of these estimates, a CAP budget cut would benefit (detriment) net contributors (net beneficiaries) in the form of a taxpayer saving (loss). In the model, income changes feedback to each economy as an increase (decrease) in expenditure and savings. This effect is demonstrated in the lower part of Table 1 (parts B and C). As an initial observation, the results are consistent for both scenarios in terms of the comparative magnitudes across regions and the signs of the estimates.

For the market scenario the following observations can be made compared with the baseline in 2030. First, the CAP budget cuts lead to strong reductions of the CAP receipts in all countries. Second, most of the net contributors turn now into a positive net position, i.e. the removal of the calculated CAP contribution is higher than the loss of CAP receipts. This is the case in particular for Belgium, Germany, Italy, Netherland, Sweden and the UK. Third, among the biggest losers (> -€400 million) are Bulgaria, Croatia, France, Greece, Hungary, Ireland, Poland, Romania and Spain.

The sustainable scenario shows much smaller impacts on the CAP budget. Compared to the size of the payments, only Croatia has a tangible reduction compared to the initial net position.

The description of the CAP budget is the exact accountancy of payments and receipts by member state according to the current policies and the assumed changes in the two scenarios. The welfare impacts instead take into account the impacts of the scenarios on the economy, presented as the real income or equivalent variation (EV) changes. To better analyse where the impacts or changes come from, Figures 1 and 2 presents a decomposition of the EV changes for EU aggregates.

The EV results in the market scenario, with a €20 billion welfare gain, show losses accruing to the 'new' EU13 states vis-à-vis EV gains of the 'old' EU15 states. This result is driven by the CAP budget, but also changes in *Allocative efficiency* (i.e., efficiency gains which arise from changing resource or product usage in the presence of market distortions), and *Technology effects* (i.e., money metric equivalent from improvements in output or input augmenting technical change). Moreover, the *Terms of Trade* effect (i.e, the unit price ratio of exchange between exports and imports) in the EU regions is the net result of (i) change in agri-food prices from adjustment in agricultural support and (ii) changes in the real exchange rate (i.e., factor prices). The sustainable scenario results in a slightly negative EV of €5.4 billion, with higher losses on the EU15 side.

Effects on product and factor markets

The agri-food production falls by about 1% under both scenarios compared to the baseline (Figures 3 and 4). The two scenarios show some different sectorial patterns and different path to reach similar results in terms of production. The most notable difference appears in the dairy sector which under the market scenario, due to the increased market access in many third countries, increases its production by about 1% while under the sustainable scenario it drops by more than 1%. The cause behind the difference between both two scenarios relies on the change in production drivers. Under the market scenario the increase in imports (more than 15% of agri-food imports) is one of the key factors in the decrease of domestic production. Under the sustainable scenarios the domestic policy changes are the main trigger for the change in production, while trade flows remain almost unchanged, with a limited decrease in exports and only a reduced increase in imports.

The policy with the highest impact on agriculture production is, under the market scenario, the removal of the first pillar. Analysing the shock decomposition, the removal of decoupled payments has a negative effect on agricultural production with about 3% compared to the baseline (the reduction of decoupled payments under the sustainable scenario affects the production by 1.3%). The trade policies have a negative effect particularly on rice production and beef & sheep meat, while is positive mainly for the dairy products. In 2030, EU28 agri-food trade balance deteriorates for market and sustainable scenarios by €1.9 billion and €1.7 billion euros respectively.

The change in the production causes a consequent increase in the market prices of agricultural (and food) products which in 2030 would be 3% (0.5%) under the market scenario and 2% and (0.4) under the sustainable scenario. Again, the main change is due to the change in the decoupled payments.

Agricultural and food market price rises are driven in large part by marginal cost increases in land rents paid by the farmer. The magnitude of these cost-push increases is positively related to the magnitude of changes in CAP support.

Interestingly EU28 aggregated land rent shows a clear pattern between 2011 and 2030. In the base the rent is almost stable while the changes of the CAP are having opposite effects on land rent (Figure 5). Under market (sustainable) scenario CAP support shocks are causing a decrease (increase) of land rent. In the case of the market scenario the drop is due to the removal of first pillar payments which are (partially) capitalized into land rent. In the case of the sustainable scenario the redirection of payments into greening and agri-environmental payments, which are entirely capitalised into land, is the main force behind the land rent increase in the EU.

Figure 6 shows that looking at member states, the pattern is similar (decrease under market and increase under sustainable) with very few exceptions (like the case of Malta or Luxemburg). Nevertheless, the magnitude of the shocks varies according to member states mainly depending on their initial level of capitalisation of first pillar payments into land.

On the employment side, both scenarios have a negative effect on jobs in the agricultural and food sector. In comparison with the baseline, decrease are more pronounced in the market scenario (-4.1% in 2030) compared with -1.4% in the sustainable scenario. Figure 7 decomposes the changes in agri-food employment. It shows the adverse impact of the reduction in first pillar payment for employment, while the impacts of second pillar policy changes are mixed. Trade policy has a small negative impact on jobs.

4 Conclusion

This study examines some potential effects arising from two extreme alternatives for the CAP at the horizon 2030. It represents the CGE part of a more comprehensive research work (*Scenar2030*) which aims at identifying major future trends and driving factors for the European agriculture and rural regions and the challenges resulting from them. One scenario emphasises a low cost and competitive farming in an open world. The other scenario accentuates a sustainable use of natural resources and the provision of public goods. It is expected the post-2020 CAP will be somewhere between these two scenarios.

As any CGE analysis, there are number of caveats, although this should not detract from the contribution that this study makes in providing a first set of results. The paper presents traditional macro results (i.e., welfare, output, input and prices). There are currently refined together with the generation of other results such as effects on employment, self-sufficiency or environment. For instance, on the latter, GHG emission of the EU economy experiences very minor changes compared to the baseline in 2030. Looking only at the agricultural sector, in both scenarios a reduction between 1 and 2% can be appreciated. When decomposing these changes, the first pillar policy changes contribute the most to GHG emission reduction. Total drop is higher in the sustainable scenario due to the emphasize of second pillar support.

If the CAP remains a redistributive policy as shown with the breakdown by member states of CAP expenditures, tougher CAP budget cut in the market scenario benefit net budget contributors. A more market-oriented CAP seems to have larger positive effects on macroeconomic indicators, including welfare gains (real income). On the other hand, a more sustainable CAP provides further gains in terms of public goods delivering that are not fully captured by our model. It remains to better scrutinize the main driving forces behind national and sectorial changes through robust decomposition by CAP measures and EU policy (agricultural, trade, climate change). Finally the linkage with other models would allow the inclusion of a wider range of factors and connecting global markets to individual farms.

5 References

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Table 1: CAP budget (€millions, 2016 prices)

	AT	BE	BG	HR	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IE	IT
A. CAP budget estimates in 2016															
1. CAP receipts	1204	565	1091	786	72	1120	912	218	806	8426	5771	2285	1769	1485	5446
Pillar 1: coupled	79	87	43	8	3	34	26	1	50	908	18	256	64	21	684
Pillar 1: decoupled	420	292	526	510	34	556	560	78	319	4396	3277	1122	893	818	2474
Pillar 1: greening	180	125	226	55	15	238	240	33	137	1884	1405	481	383	351	1060
Pillar 2: LFA	135	3	30	72	4	67	0	4	115	437	146	90	11	93	109
Pillar 2: agri-env.	264	19	100	31	9	138	30	40	118	254	408	62	146	129	355
Pillar 2: physical K	42	23	82	66	4	45	40	39	22	235	263	172	174	20	457
Pillar 2: human K	37	10	41	24	3	23	10	15	32	178	103	87	65	21	175
Pillar 2: wider dev.	46	5	43	19	1	19	6	8	13	74	151	15	30	33	103
2. CAP contribution	1201	1932	175	210	82	679	1025	86	715	8331	11363	764	420	760	5982
3. Rebates	-46	-175	-19	-21	-8	-75	36	-8	-84	-941	-407	-87	-48	-86	-690
4. Net position	-43	-1543	896	531	-18	366	-77	124	7	-847	-5999	1435	1301	639	-1226
B. Market Scenario vs. baseline in 2030															
1. CAP receipts	-673	-391	-618	-655	-42	-762	-671	-117	-516	-6267	-4003	-1518	-952	-1080	-3120
2. CAP contribution	-795	-1103	-131	-146	-56	-464	-654	-58	-480	-5244	-7195	-514	-300	-511	-3423
3. Rebates	12	86	11	13	5	40	58	5	42	457	108	45	26	44	302
4. Net position	134	797	-476	-496	19	-258	41	-54	7	-566	3301	-960	-626	-525	606
C. Sustainable Scenario vs. baseline in 2030															
1. CAP receipts	128	-63	22	-316	9	33	-90	10	60	-633	-158	31	-54	17	-471
2. CAP contribution	-39	-65	-6	-10	-3	-24	-35	-3	-23	-270	-373	-26	-15	-25	-172
3. Rebates	2	15	2	2	1	7	9	1	7	79	20	8	4	7	52
4. Net position	169	17	31	-304	14	64	-47	15	91	-284	235	65	-35	49	-247

Table 1 (cont.): CAP budget (€millions, 2016 prices)

	LV	LT	LU	MT	NL	PL	PT	RO	ES	SK	SI	SE	UK	EU15	EU13	EU28
A. CAP budget estimates in 2016																
1. CAP receipts	331	613	43	14	986	4672	1178	2885	6151	603	287	912	3727	39912	14447	54359
Pillar 1: coupled	5	13	0	0	116	102	249	90	1093	16	50	3	25	3617	428	4045
Pillar 1: decoupled	137	297	22	4	487	2254	281	1198	2894	288	88	467	2109	19942	6859	26801
Pillar 1: greening	59	127	10	2	209	966	120	513	1240	124	38	200	904	8547	2775	11322
Pillar 2: LFA	30	29	4	1	2	235	111	244	77	60	34	44	52	1418	820	2238
Pillar 2: agri-env.	28	33	4	1	34	306	89	307	262	38	32	116	443	2587	1207	3794
Pillar 2: physical K	53	58	2	4	39	360	215	261	353	38	23	21	94	2004	1202	3207
Pillar 2: human K	12	33	1	2	10	321	73	193	172	17	17	33	56	999	765	1763
Pillar 2: wider dev.	8	23	0	0	7	128	41	79	59	24	5	28	45	626	387	1013
2. CAP contribution	100	165	178	59	2527	1669	660	571	4342	313	164	1661	8202	49701	4634	54334
3. Rebates	-11	-17	-21	-4	647	-190	-77	-68	-493	-35	-17	155	2790	516	-516	0
4. Net position	220	431	-156	-48	-894	2813	442	2246	1316	255	106	-594	-1684	-9272	9272	0
B. Market scenario vs. baseline in 2030																
1. CAP receipts	-238	-387	-29	1	-700	-2306	-515	-1493	-4056	-320	-150	-599	-2908	-27044	-8039	-35083
2. CAP contribution	-73	-104	-131	-26	-1613	-1227	-433	-448	-2919	-220	-110	-1076	-5628	-31745	-3337	-35082
3. Rebates	7	9	11	2	24	108	38	40	256	19	10	17	-1795	-293	293	0
4. Net position	-158	-274	113	29	937	-971	-44	-1005	-881	-81	-30	494	925	4408	-4409	-1
C. Sustainable scenario vs. baseline in 2030																
1. CAP receipts	-14	-53	-2	-5	-119	-273	-22	26	-23	-29	6	14	167	-1167	-633	-1800
2. CAP contribution	-4	-6	-6	-3	-80	-62	-21	-21	-148	-12	-6	-51	-292	-1627	-173	-1800
3. Rebates	1	2	2	0	-2	18	7	7	44	3	2	1	-301	-50	50	0
4. Net position	-9	-46	6	-2	-40	-193	6	54	168	-14	14	66	157	409	-409	0

Figure 1: EV decomposition over 2016-2030 (% change, market scenario vs. baseline)

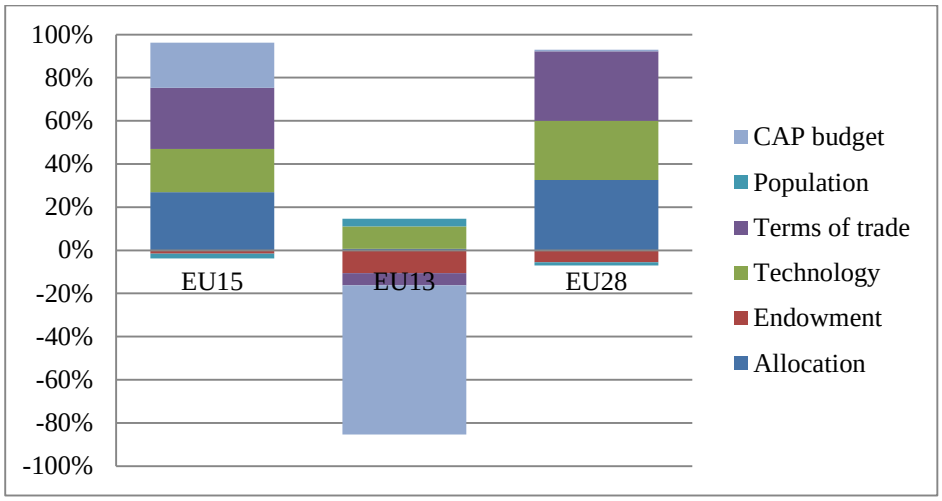

Figure 2: EV decomposition over 2016-2030 (% change, sustainable scenario vs. baseline)

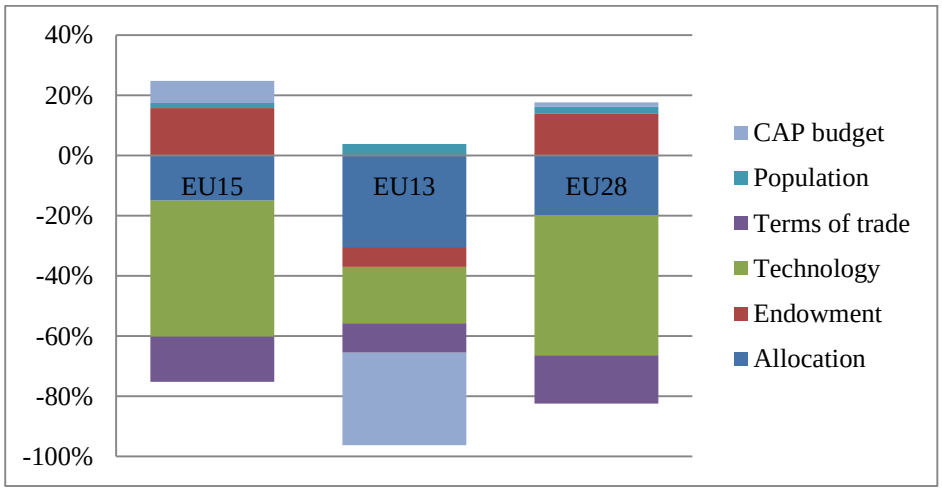

Figure 3: Index of agricultural production in the EU28, 2016- 2030 (2016=100)

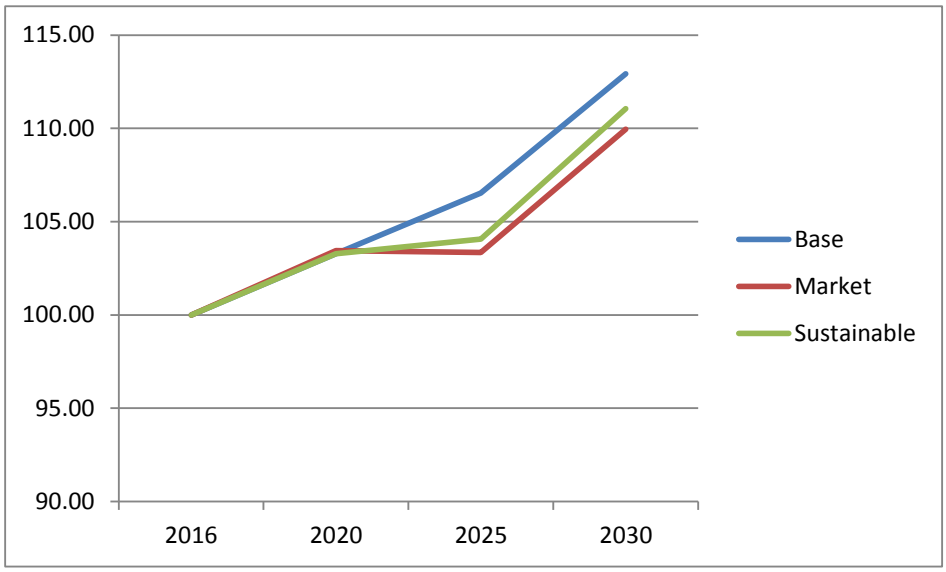

Figure 4: Index of food production in the EU28, 2016- 2030 (2016=100)

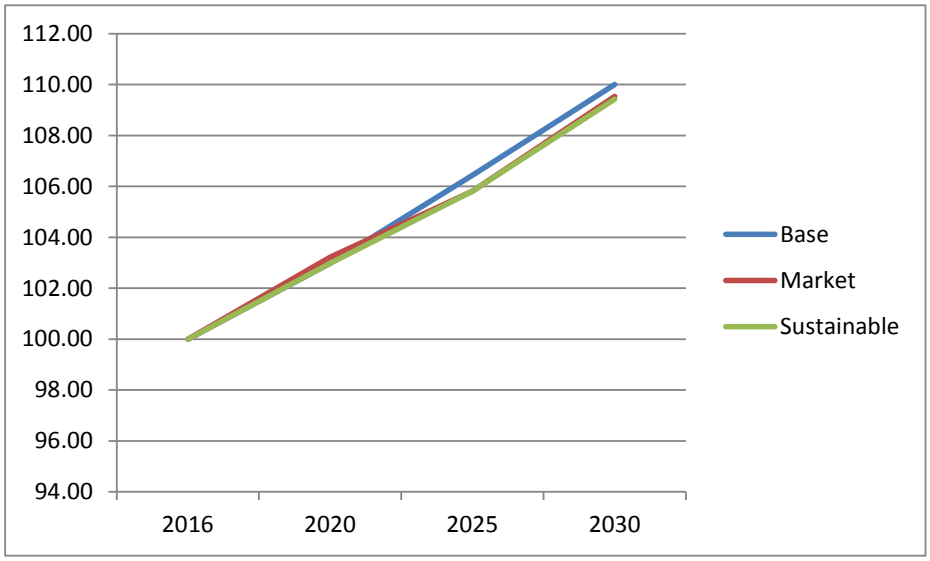

Figure 5: Index of land price in the EU28, 2011-2030 (2011=100)

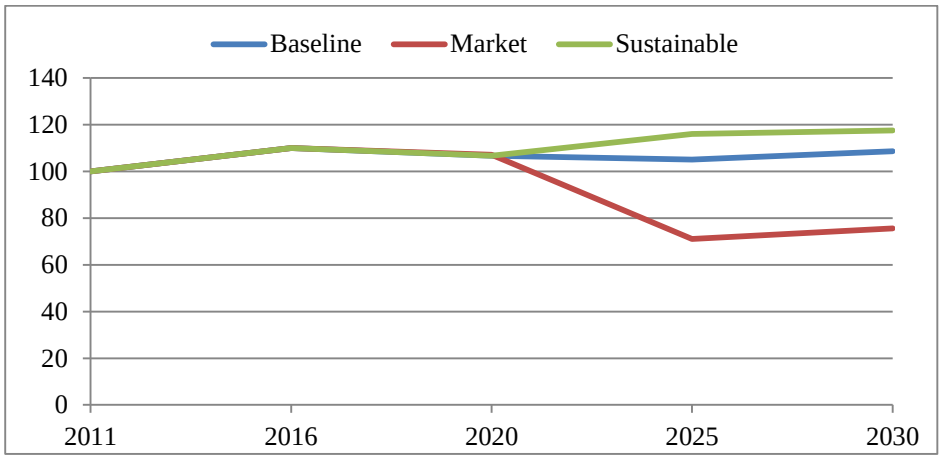

Figure 6: Land price by EU member state in 2030 (% change, scenarios vs. baseline)

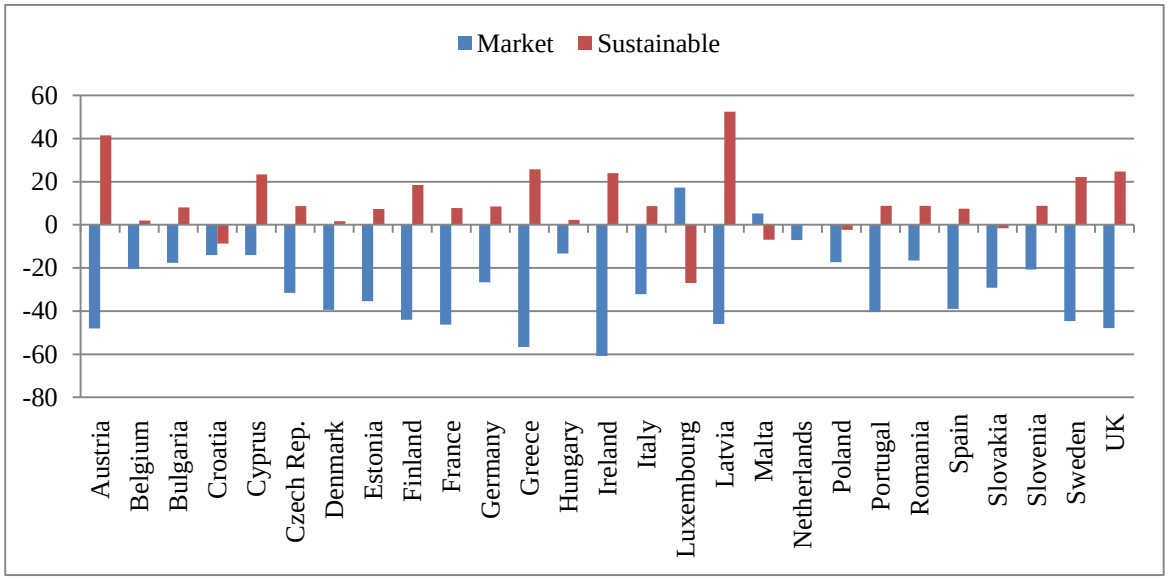

Figure 7: Decomposition of employment drivers in the agricultural and food sectors in 2030 (% change, scenarios vs. baseline)