Greening direct payments in Italy: what consequences for arable farms?

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Abstract

The paper analyses the effects of greening measures on farm income in Italy focusing on two specialised farming systems that will be largely affected by the introduction of green payments: the maize production system, localized mainly in Northern regions, and the durum wheat production system, especially localised in Central and Southern regions. Data show that in the case of the farms specialised in maize production, the green payments generally do not compensate the reduction of the farm gross margin, while for the farms specialised in durum wheat, the green payments would cover the reduction of farm gross margin determined by the introduction of the greening obligations.

Key words: CAP reform, direct payments, CAP greening, Italian farming systems, FADN

1. Introduction

The logic underlying the greening of direct payments in the most recent CAP reform is enhancing the provision of public goods through the agricultural activity. Quite straightforwardly, a component of the total amount of direct payments becomes the remuneration for specific actions required to farmers: if they pursue these specific actions (or other considered equivalent) they receive that remuneration; if not, the do not receive that remunerations and sanctions may occur. The long path that led to this decision move from two different origins: on one side the acknowledgement of the rapid post-war transformation of agriculture in Europe that carried many environmental consequences, especially in terms of reduction of biodiversity and increase of pollution (Garrod, 2009); on the other side, the need to justify the large amount of direct payments granted to farmers with no specific commitment on their behalf (Anania, 2010).

The first step towards the reduction of the environmental pressure of the agricultural activity has found place in the second pillar of the CAP, thanks to the agro-environmental measures. An attempt to justify direct payments as remuneration for the provision of public goods in agriculture came with the conditionality (Matthews, 2013). With the greening of direct payments, the EU keeps following the same path: a mandatory set of requirements to meet in order to "gain" the full amount of direct payments.

The fulfilment of environmental constraints implies a change in the land management and in the techniques that have consequences on the cost structure borne by farmers. Although the optimistic previsions of the Commission on the impact of the greening on the costs of productions, this issue should be actually evaluated according to specific production systems. In this paper we develop earlier work on the cost of greening for farms in Italy focusing on two specific production systems: maize (especially located in Northern Italy) and durum

wheat (in Centre-Southern Italy). After a short review on the recent literature on the greening of direct payments (section 2), section 3 focuses on the objectives and methodology of the paper. Firstly we quantify the farms and the agricultural area hit by the mandatory requirements of the greening in Italy in order to identify "reference farms" for each region where the two production systems prevail. Secondly, through data form the Italian FADN, we calculate the change in the total gross margin value due to the change in the farm specialisation. Finally, we compare this change (which is usually a loss, given by the obligation to diversify specialised systems) with the share of direct payments due to the fulfilment of the green payments requirements. The results are presented in section 4. Data show that, in the case of farms specialised in maize production, the loss of income due to the increase in the specific costs (incorporated in the gross margin value of each crop) is higher than the share of direct payments representing the "remuneration" of the public good produced (green measures). On the opposite, for farms specialised in durum wheat, it seems that the green payments would compensate the reduction of gross margin deriving from the new environmental obligations. Section 5 draws some conclusions.

2. The greening of direct payments

2.1 The measures

The new CAP reform (European Parliament and Council, 2013) introduces an explicit attempt to remunerate public goods produced by farmers through a specific component of the direct payments. The so called green payment is a share of the total potential payment that farmers may receive from the CAP in exchange for the provision of public goods. According to the new regulation on direct payments, 30% of the total amount of resources devoted to direct payments in each Member State is conditioned to the respect of three mandatory requirements: to maintain on-farm permanent grassland and, limited to farms specialised in arable crops, to diversify crops in order to improve biodiversity and to devote 5% of the UAA to "Ecological Focus Areas" (EFA). Organic producers and farmers into the "small farmers" scheme are exempted from the obligations in order to receive green payments, while certification schemes and some voluntary agri-environment schemes that yield an equivalent or higher level of benefit for the climate and the environment can be considered "equivalent" to the three greening obligations

The objective of greening direct payments is not new in the CAP: since Agenda 2000 there has been a major effort in justifying direct support and CAP in general as a sustainable policy able to improve environment and the synergic connection between agricultural activity and environmental concerns (Ahner, 2001; European Commission, 1992; European Commission, 1996)[1]. The new environmental requirements may be considered an effort to reduce the mono-cropping specialisation that has been the result of years of productivism and industrialisation of agriculture and to pave the way to a new sustainable way to produce agricultural products and food (Schmid et al., 2012).

The measure is a compromise between the original proposal of the Commission and the revisions proposed by the European Parliament, whose position was relevant in reviewing the original draft of the Commission (for a reconstruction of the intense debate on the matter, see

[1] This proposal goes into the same direction of the cross compliance being, as it is, a non-contractual and mandatory measure. At the same time, large efforts towards a more effective greening of the CAP have been pursued within the second pillar with the agro-environmental measures, based, on the contrary, on a contractual and voluntary approach.

Matthews 2012 and 2013 and Bureau 2013). The result, according to many authors, is a "less green" CAP, but at the same time, it is acknowledged the simplification in the direction of "more manageable" measures (Bureau, 2013).

Crop diversification applies only to farms with arable land exceeding 10 hectares: it requires the presence of at least 2 crops on arable land between 10 and 30 hectares (the main crop should not cover more than 75% of the total arable land), and of at least 3 crops on arable land exceeding 30 hectares (the main crop should not cover more than 75% and the two main crops together should not cover more than 95% of that arable land)[2].

The requirement of ecological focus area (EFA) applies only to farms with at least 15 hectares of arable land. These farms shall ensure an EFA corresponding to at least 5% of the arable land[3]. The following land uses can be considered as EFA: fallow land, terraces, landscape features, buffer strips, areas with short rotation coppice with no use of chemical products, afforested areas, areas with catch crops and areas with nitrogen fixing crops[4]. Member States may decide to implement up to 50% of the EFA at the regional level in order to obtain adjacent ecological focus areas and may also decide to permit farmers whose holdings are in close proximity to fulfil this obligation on the basis of a collective implementation.

2.2 The debate

The intention of the original proposal of the Commission was to strengthen the role of agriculture in contributing to the objectives of Europe 2020. Through a mandatory "greening" component of direct payments, the CAP aims at promoting both climate and environment policy goals at a larger scale compared to the voluntary agri-environmental measures (Povellato, 2012). According to the assessment of the European Commission (2011), the impact of greening measures on the income of European farms equals, on average, to € 43 per hectare of potential eligible area. It is, however, recognised that such cost may vary widely according to the regions and farming systems, given the differences in land use and profitability as well as the specific situation of each farm. According to this assessment, at the EU-27 level, it is estimated that 29% of farms would have a cost between € 15 and € 30 per hectare, 4% would have cost higher that € 200 per hectare and about 21% of farms would have no costs. A recent study (Westhoeck et al., 2012) concluded that the introduction of the greening measures will not have a significant impact on the quality of the natural environment given that the compliance applies only to 2% of the agricultural area in the EU.

The main critics of the greening in the academic environment are related to the environmental benefits that may derive of this type of super-cross compliance, since the common rules are applied to the all EU territory without reflecting the diverse characteristics

[2] This requirement does not apply where more than 75% of the eligible agricultural area is permanent grassland, used for the production of grasses or other herbaceous forage or crops under water or a combination of these uses, provided the arable area not covered by these uses does not exceed 30 hectares.

[3] In 2017, the Commission will present an evaluation report on the implementation of this requirement and the threshold could be increased from 5% to 7%.

[4] This requirement is not applied even where more than 75% of the eligible agricultural area is permanent grassland, used for the production of grasses or other herbaceous forage or cultivated with crops under water either for a significant part of the year and where more than 75% of the arable land is used for production of grasses or other herbaceous forage, land lying fallow, cultivated with leguminous crops or a combination of these uses. The requirement is though applied in cases where the arable area not covered by these uses would exceed 30 hectares.

of the different agro-ecosystem across Europe (for a more in depth analysis of the environmental benefits of the greening of the CAP, see Jambor and Harvey 2009 and Garrod 2009).

Westhoek et al. (2012) show how the EFA requirement is potentially the most effective measure in providing highly valued public goods, but that this effectiveness could be increased by tailoring these measures to local conditions and, above all, by stimulating the realisation of green infrastructures at territorial scale through coordination and cooperation. From this perspective Mahé (2012) maintains that the definition of the EFA should not apply to farming units but rather to a spatial grid. He also points out how the EFA can end up removing fertile soil from production while the exchange of entitlements and obligations would have concentrated the EFA in areas of higher ecological value and lower fertility.

Matthews (2012 and 2013) underlines how greening would add costs to the farmers while their capacity to ensure measurable environmental benefits are rather questionable. Matthews also connects the attempt to green the direct payments as a way to avoid larger cuts to agriculture in the budget discussion, but this argument has been weakened by the lack of serious cuts to payments when the greening requirements would not be met. In other words, no real savings were coming on that front. At the same time, a more effective way of greening the CAP could have been reached through enhancing agro-environmental measures in Pillar 2 rather than greening Pillar 1.

A rather sharp position has been expressed by Bureau (2013) who maintains that the CAP, especially after the amendments of the European Parliament, will be less green in the future, especially due to the equivalence of national schemes with the greening measures. Indeed, national schemes are often of a voluntary nature, and they cannot be made equal to mandatory measures. Furthermore, the extension of the "green by definition" to all non-arable land and to the "small farmers" will also reduce the positive impact of the green measures.

According to several authors, in some Member States the greening measures partially overlap with a number of "Good Agricultural and Environmental Conditions" (GAEC). Thus, specific payments will be introduced for some practices which already are required without payment under cross compliance, where the Member States have the potential to be tailored more specifically to local conditions (Hart and Baldock, 2011). In order to increase the effectiveness of the greening measures a high flexibility in their implementation is also requested, to take account of locally specific issues and to allow flexible interpretation at the farm level in a way that allows the stated outcomes of the measure to be achieved.

The need of an increasing flexibility of the measures is also recognised by the Groupe de Bruges (2012), which defines the current greening "random, rigid, ill targeted and lack incentives for farmers to keep on improving their 'green' performance".

From a perspective of policy effectiveness, some authors argue that the greening in its current form is not cost-effective, since it would increase the administrative burden of farmers and the implementation costs of national authorities (Roza and Selnes, 2012). According to these authors this would be legitimised only by substantial environmental effects which currently do not seem fully documented.

Finally, the shortcomings of the greening of direct payments identified by Mahé (2012) are related to the low requirements in relation to existing practices (crop rotation and portion of utilised agricultural areas in ecological focus areas) and to the high cost of environmental

bonuses due to their application methods (supplements to basic payment on all the utilised agricultural areas, without adjustment to shortfall).

3. Objectives and methodology

3.1 Background

In the recent literature only a few works have been developed around the impacts of the greening measures on farm revenues. Some papers have focused on their environmental impact, analysing the overall emission reduction that can be linked to the greening measures, as a consequence of the different shifts in production between EU Member States and non-EU countries, specifically emerging countries (see, for example, Cantore 2012).

A paper by Czekay et al. (2013) shows the impact of greening on Polish farms. From the Polish FADN dataset farms were classified in "green" and "non-green" according to their compliance with the greening requirements. Following an optimisation model, the main outcome is that the impact of greening measure is basically limited to the reduction of UAA for the EFA requirements and implies an overall reduction of 3-4 percentage points on the farm revenues. Most farms would comply with the requirements, and only large arable farms would have some convenience in declining the green payments.

Similar results with a different methodology have been reached by Heinrich (2012) for the German farms. She works on 18 farms covering most farm types in Germany, evaluating the greening effects on gross margins. All in all, the share of direct payments devoted to the greening measure is a strong incentive to undergo the scheme and only farms with high gross margin might turn down the support.

Finally a study about Cornish farms (Brown and Jones, 2013) focuses on dairy, mixed and upland farms. Through semi-structured interviews the study investigates the reaction of farmers to the greening measures. The study concludes that dairy farms are heavily impacted by the measures and in particular those that grew only one arable crop. Mixed farms are also impacted predominantly just from the permanent pasture and crop diversification elements of greening, while upland farms are likely to remain largely unaffected.

About Italy, an evaluation of the impacts of the post-2013 CAP Reform on farms gross margin was carried out by Arfini et al. (2013) through Positive Mathematical Programming. According to these authors' simulations, based on FADN data of 460 farms located in the plain area of the Emilia Romagna Region, the economic impacts of greening (calculated as income foregone) in this area are on average 21 euro/ha, corresponding to a reduction of only 1,5% compared to the baseline scenario. Vanni et al. (2013), analysed in an earlier study the impact of greening on the farm gross margin for five Italian regions (Piemonte, Lombardia, Marche, Puglia and Basilicata), with the objective of observing the possible effects of the greening measures as proposed by the European Commission in 2011 in different arable farming systems across Italy.

The present study adds to this literature featuring two steps of analysis. As a first step we used the agriculture census (farm universe) to calculate the potential number of farms affected by the greening measures and to identify "representative farms" according to the two main arable systems in Italy: maize and durum wheat. From there, we step forward using FADN data to calculate the change in the gross margin values following the implementation of the

greening and to compare that to the green payments in order to assess the actual cost of the greening on Italian arable farms.

3.2 The focus on specialised farming systems

The paper focuses on two specialized farming systems that are likely to be affected at the largest extent by the introduction of green payments in Italy: the maize system, localized mainly in Northern regions, and the durum wheat system, especially localised in Central and Southern regions. Tables 1 shows the regions selected for maize and wheat specialization respectively, as well as some features of the regional arable crops sector.

Table 1. The arable sector in the selected regions

Farming system specialised in maize production				Farming system specialised in wheat[1] production			
Region	% of farms specialised in arable crops	% arable land/UAA	% maize /arable land		% of farms specialised in arable crops	% arable land/UAA	% wheat/ arable land
Piemonte	30.5	53.7	34.0	Marche	48.7	79.4	39.8
Lombardia	41.1	72.5	47.5	Molise	35.8	72.3	40.3
Veneto	53.7	70.2	50.3	Puglia	12.8	50.7	54.9
Friuli V.G.	60.1	74.3	49.1	Basilicata	36.4	60.2	46.0
Italy	23.7	54.5	16.0	Italy	23.7	54.5	28.0

Source: Istat, 6th Agricultural Census;
[1] Common wheat and durum wheat

These eight regions were selected on the basis of the following criteria:

- The selected regions are particularly relevant in the arable crop sector in Italy, since they concentrate the 53% of the Italian farms specialized in arable crops, equalling the 60% of the arable crops area at the national level;

- The area share covered either by maize or wheat in these regions is generally well above the national average, determining a strong specialization of the arable farms in these two crops.

In addition, according to recent simulations regarding the number of farms involved in the greening measures (Vanni and Cardillo, 2013), these regions are potentially affected by the greening measures to a larger extent compared to other regions, both as a result of their higher average size and of the strong specialization (see table 2).

Table 2. Arable farms (%) affected by greening requirements in the selected regions

Farming system specialised in maize production					Farming system specialised in wheat[1] production				
Region	Crop div. only	EFA only	Crop div. and EFA	Total	Region	Crop div. only	EFA only	Crop div. and EFA	Total
Piemonte	3.2	11.6	6.9	21.8	Marche	3.3	9.1	4.1	16.4
Lombardia	4.4	17.5	12.9	34.8	Molise	6.2	11.3	4.7	22.2
Veneto	2.0	4.7	2.9	9.5	Puglia	8.4	5.0	11.0	24.3
Friuli V.G.	2.6	7.3	3.7	13.6	Basilicata	10.6	6.3	8.0	24.9
Italy	3.1	5.6	4.2	13.0	Italy	3.1	5.6	4.2	13.0

Source: Elaboration on Vanni and Cardillo (2013) [1] Common wheat and durum wheat

3.3 Methodology

The first step of our analysis was to identify the structural characteristics of the specialised farming systems in the different areas (mountains, hills and plains) of each

selected region. On the basis of the data from the 6th Italian Agricultural Census, for each area a "representative" arable farm was built. More in details, the crop specialisation of each representative farm and the farm size were calculated using the features of the farms that are potentially affected by the greening requirements (most common crop and average UAA). These farms were identified using the micro-data regarding all the Italian farms registered in the 2010 agricultural census (1.6 million units) and by excluding all the farms that already comply with the three greening requirements (Vanni and Cardillo, 2013). As it may be observed in table 3, in the selected regions the degree of specialisation of farms that potentially will be subjected to the crop diversification requirement is particularly high, especially for those specialised in maize production. Indeed, the percentage of farms specialised in a single crop (namely, following the greening requirement, that is cultivated in more than the 75% of the farm arable area) is well above the national average for both the farming systems.

Table 3. Degree of specialisation for farms affected by the crop diversification

% of farms with maize cultivated on > 75% of arable land					% of farms with wheat cultivated on > 75% of arable land				
Region	Mountains	Hills	Plains	Total	Region	Mountains	Hills	Plains	Total
Piemonte	45.5	40.6	57.3	53.7	Marche	34.1	48.5	-	46.6
Lombardia	46.7	53.8	62.3	61.4	Molise	27.2	50.8	-	46.4
Veneto	92.6	74.1	64.2	65.5	Puglia	78.3	56.3	62.4	59.7
Friuli V.G.	100.0	66.5	60.1	61.5	Basilicata	24.3	52.2	50.7	48.1
Italy	4.9	4.1	35.7	18.0	Italy	22.7	35.7	20.8	28.1

Source: Elaboration on Istat, 6th Agricultural Census

As showed in table 4, some areas were excluded because they are not represented in the FADN database, so that in total 16 representative farms were identified. The analysis on the economic impacts of the greening measures on these representative farms was based on the Italian FADN data base (average 2010-2011), using a constant sample of 1,611 agricultural holdings[5].

Table 4. The FADN sample (number of farms)

Farming system specialised in maize production					Farming system specialised in wheat production				
Region	Mountains	Hills	Plains	Total	Region	Mountains	Hills	Plains	Total
Piemonte	-	39	250	289	Marche	151	87	-	238
Lombardia	-	35	246	281	Molise		9	-	164
Veneto	-	24	369	393	Puglia	65	7	60	132
Friuli V.G.	-	23	101	124	Basilicata	141	4	-	145
Total	-	121	966	1,087	Total	357	107	60	524

The impact of the greening measures was evaluated by comparing a pre-reform scenario with a post reform scenario (see table 5 for details).

[5] As it may be noticed in table 4, the distribution of the constant sample is very heterogeneous amongst regions and some representative farms were built through a very small number of units (especially the farms located in the hills of Molise, Puglia and Basilicata). Nevertheless, these areas were included in the analysis since in all the areas the data on crops gross margin showed a little variability (unlike the structural features) and the results were coherent with the other areas under study.

Table 5. Methodology overview

	Pre-Reform scenario	Post-Reform scenario
Crop diversification	One crop (1): maize or wheat	Three crops: (1) (Maize or wheat) 75% (2) 20% and (3) 5% of the UAA. The choice (and the order) of crops (2) and (3) is based on the area covered by these crops in each region/altimetry
Ecological Focus Area	0%	EFA Mountains: 0% UAA; EFA Hills: 2,5% UAA; EFA Plains: 5% UAA
Farm area	Average UAA of farms potentially affected by greening	Mountains: UAA; Hills: UAA net of EFA Hills; Plains: UAA net of EFA Plains
Direct payments	FADN database	Estimates of regionalised direct payments
Green payments	-	30% of regionalised direct payments
Gross margin	Gross margin crop (1) (maize or wheat)	Gross margin of crops (1), (2) and (3)

As can be observed in the table, in the pre-reform scenario it was supposed that representative farms were entirely specialised in maize or wheat production (100% of farm area). The farm gross margin was calculated by using the gross production values and the specific costs for these crops. Direct payments were calculated by selecting, among the total amounts of the payments received by farmers, those payments related to arable crops[6]. For them we calculated the average values between 2010 and 2011 and then we divided the values obtained for the UAA of each arable crop cultivated in the farm analysed.

The simulation regarding the post-reform scenario was drawn to show the combined impact of two greening measures: the introduction of the EFA on the 5% of arable area and the crop diversification requirement.

The impact of the EFA was introduced by reducing the area of each representative farm by 2,5% in the case of farms located in the hills and by 5% of farms located in the plains, while any reduction was applied to the farms located in the mountains. Indeed, it was assumed that each farm in the post-reform scenario would use the unproductive land as part of the EFA, and it was supposed that the different locations would influence the amount of land that qualifies for EFA at a different extent.

With regard to the crop diversification measure, simulations were carried out by reducing the area cultivated with the specialised crop (maize or wheat) from 100% to the 75% of the farm area and by adding two additional crops, which represent the 20% and 5% of the UAA. The choice of the second and the third crop was based on the area covered by each crop in the region/altimetry, as recorded by the data of the 2010 agricultural census. In this simulation the crop diversification measure was slightly simplified, since the final regulation on direct payments establishes the presence of at least 2 crops on arable land between 10 and 30 hectares and of at least 3 crops on arable land exceeding 30 hectares (see section 2.1).

The data on direct payments for each representative farm were based on FADN data base for the pre-reform scenario and on the simulations carried out by De Vivo et al. (2012) on the regionalisation of direct payments in Italy as results of the 2013 CAP reform.

Finally, the impact of greening (in terms of gross margin per hectare) was compared to the share of direct payments that in the post-reform scenario will be conditioned to the respect

[6] In Italy direct payments are granted according to the historical criterion, so that it is possible to identify those generated by arable crops.

of greening obligations (30%). This difference allows us to clarify whether this share does actually remunerate farmers for the additional costs deriving from the compliance of the two greening requirements analysed. It is worth noting that, in the simulations below, green payments were calculated as the 30% of the total direct payments. However, the failure in meeting the requirements of the green payments since 2017 will imply even more than the 30% of the direct payments a farmer is entitled to.

The main drawback of this methodology is related to the hypothesis that representative farms are fully specialised in one crop, while it is likely that in order to maximise the farm gross margin, "real" farms are already adopting diversification strategies. For this reason the simulations may over-estimate the impact of greening and are useful especially for a comparative analysis amongst the different areas and the two crops under study. At the same time, it should be noticed that representative farms were 'built' on the basis of specialised farms potentially affected by this requirements, namely on farms that, according to the data of 2010 agricultural census, have more of 10 hectares of arable land and do not comply with the diversification rule, cultivating more than 75% of arable land only with one crop. As it can be observed in the table 4, since in the selected regions these farms have a high degree of specialisation, it may be supposed that in the majority of the cases the effects estimated below could be quite realistic.

Another issue to be considered is related to the role of public support for the Italian farms specialised in maize and wheat production, which will be influenced not only by the new environmental requirements that have been introduced, but also by the redistribution of the first pillar direct payments.

As confirmed by the simulations carried out by De Vivo et al. (2012), the choice of the regionalisation process of direct payments will effect crucially the amount of direct payments granted to different farms and also the absolute amount of resources devoted to the greening payments. Our scenarios are based on a rather simple hypothesis of regionalisation according to the administrative regions, which, overall, implies a generalised redistribution of direct payments from plains to hills and mountains and from the historical beneficiary regions to all the others. On the contrary, according the new regulation Member states may also decide to apply the green component of direct payments at the farm level, by calculating it as a percentage of the total value of payment entitlements that the farmer will receive yearly. Of course this choice would influence to a large extent the amount of green payments received by farmers and, indirectly, the distribution of such payments across sector and territories.

Results are presented by comparing the representative farms of each area (mountain, hill and plain) for the different regions, by keeping separated the northern regions specialised in maize production and the Centre-Southern regions specialised in wheat production, in order to better emphasising the different impacts of the greening measures on the two main specialised systems of the Italian arable crop sector.

4. Results

4.1 The effects of greening on farms specialised in maize

The first objective of this analysis was to calculate the variation in gross margin values due to the greening measures in each high specialised farming system. Table 6 shows the effects of greening on the eight representative farms specialised in maize production and located in the Northern Italian regions. The results show how the effect of greening on gross

margin is negative in all the farms under study, even though it varies according to the different regions and areas considered.

According to these simulations, the decrease of gross margin per hectare ranks from about 131 €/ha in the hills of Lombardia to more than 230 €/ha in the hills of Friuli Venezia Giulia and in the plains of Piemonte. The relatively strong impact of greening on farms profitability for this farming system, which on average is almost 200 €/ha, is due to fact that the gross margin of the two additional crops introduced in place of maize is considerable lower compared those of the main crop. When looking at the farm level values, significant variations of the gross margin may be observed, which are determined by the different average size of farms that will be subject to the greening requirements in the different areas.

Table 6. Effects of greening on farms specialised in maize production

Region	Altimetry	UAA (ha)	Farm level (€)			Unitary values (€/ha)		
			GM pre-reform	GM post-reform	Δ GM	GM pre-reform	GM post-reform	Δ GM
Piemonte	Hills	27.0	40,139	34,718	-5,421	1,487	1,286	-201
	Plains	38.8	55,474	46,195	-9,279	1,430	1,191	-239
Lombardia	Hills	29.0	34,416	30,606	-3,810	1,187	1,055	-131
	Plains	43.2	65,252	55,376	-9,876	1,510	1,282	-229
Veneto	Hills	31.1	46,998	41,979	-5,018	1,511	1,350	-161
	Plains	31.7	45,572	40,439	-5,132	1,438	1,276	-162
Friuli V.G.	Hills	27.9	38,121	31,477	-6,645	1,366	1,128	-238
	Plains	31.6	38,676	32,605	-6,071	1,224	1,032	-192

Source: own elaboration on FADN data

As described in the previous section, from a policy perspective it is interesting to analyse whether the share of the regionalised direct payments that are conditioned to the greening obligations - which, according to the new regulation on payments, equal to 30% of the direct payment ceilings - is able to compensate farmers for the economic impact of such obligation. This simulation was carried out by observing, for each representative farm, the difference between the green payments and the variation of gross margin.

As it may be observed in the table 7, when looking at the eight representative farms specialised in maize production, the green payments generally do not compensate the reduction of the farm gross margin, with the only exception for the representative farms localised in the hills of Lombardia region.

Table 7. Green payments for farms specialised in maize production

Region	Altimetry	UAA (ha)	Farm level (€)			Unitary values (€/ha)		
			Direct payments	Green payments	Δ GM + Green payments	Direct payments	Green payments	Δ GM + Green payments
Piemonte	Hills	27.0	8,416	2,525	-2,897	312	94	-107
	Plains	38.8	12,094	3,628	-5,651	312	94	-146
Lombardia	Hills	29.0	12,957	3,887	77	447	134	3
	Plains	43.2	19,302	5,791	-4,086	447	134	-95
Veneto	Hills	31.1	13,127	3,938	-1,080	422	127	-35
	Plains	31.7	13,381	4,014	-1,118	422	127	-35
Friuli V.G.	Hills	27.9	8,604	2,581	-4,063	308	93	-146
	Plains	31.6	9,745	2,924	-3,147	308	93	-100

Source: own elaboration on FADN data

4.2 The effects of greening on farms specialised in durum wheat

When looking at the effects of greening in regions specialised in durum wheat production, the simulations show a lower reduction of farm profitability compared to maize production. This is due to the combined effects of the smaller farm size characterising this farming system and the lower profitability of wheat. More in details, in the pre-reform scenario the gross margin of the eight representative farms was, on average, about 15,400 euro, with a decrease of 1,500 euros as result of greening. In spite of these average values, it must be observed that the differences amongst the different areas are quite relevant, with higher decrease of farm gross margins in mountain areas of Marche regions and in hills areas of Puglia regions. In these areas the impacts of greening measures account for 62 euro per hectare and 109 euros per hectare respectively.

Table 8. Effects of greening on farms specialised in durum wheat production

Region	Altimetry	UAA (ha)	Farm level (€)			Unitary values (€/ha)		
			GM pre-reform	GM post-reform	Δ GM	GM pre-reform	GM post-reform	Δ GM
Marche	Mountains	35.6	30,267	28,066	-2,201	850	788	-62
	Hills	34.1	24,130	22,259	-1,871	708	653	-55
Molise	Hills	25.4	15,978	14,783	-1,195	629	582	-47
Puglia	Mountains	24.2	8,783	7,951	-832	363	329	-34
	Hills	29.3	17,094	13,884	-3,210	583	474	-109
	Plains	30.2	10,138	8,531	-1,606	336	282	-54
Basilicata	Mountains	23.9	7,405	6,347	-1,058	310	266	-44
	Hills	29.3	17,245	16,773	-472	589	572	-17

Source: own elaboration on FADN data

Finally, another significant difference compared to the farming system specialised in maize production is related to the quota of the regionalised direct payments that are conditioned to the greening obligations, that for the eight representative farms specialised in durum wheat would cover the reduction of farm gross margin determined by the introduction of the greening obligations (table 9).

Table 9. Green payments for farms specialised in durum wheat production

Region	Altimetry	UAA (ha)	Farm level (€)			Unitary values (€/ha)		
			Direct payments	Green payments	Δ GM + Green payments	Direct payments	Green payments	Δ GM + Green payments
Marche	Mountains	35.6	10,524	3,157	956	296	89	27
	Hills	34.1	10,081	3,024	1,153	296	89	34
Molise	Hills	25.4	6,744	2,023	828	266	80	33
Puglia	Mountains	24.2	8,969	2,691	1,859	371	111	77
	Hills	29.3	10,859	3,258	48	371	111	2
	Plains	30.2	11,192	3,358	1,752	371	111	58
Basilicata	Mountains	23.9	5,648	1,694	637	236	71	27
	Hills	29.3	6,924	2,077	1,605	236	71	55

Source: own elaboration on FADN data

5. Concluding remarks

As seen in the debate reported earlier, many experts have stressed how the final version of the greening has considerably diminished its potential in promoting sustainable farming practices at large scale. In its final form, the greening has been transformed into a much more selective tool, which probably will affect a rather small percentage of large specialised farms concentrated in specific areas (Vanni and Cardillo, 2013).

For these reasons our exercise aimed at evaluating the effects of greening obligations on Italian farms that are most likely affected by the new environmental requirements: farms specialised in maize production in Northern regions and in durum wheat production in Central and Southern regions. The data show the impacts of these requirements on farm gross margins as well as the capacity of the green component of the new direct payments to compensate the variation in gross margin due to the implementation of the new environmental rules. In spite of the clear limits of this approach, which does not consider other variables affecting the choices implemented by farmers, we consider that it still gives a good and realistic idea of what could happen in the two specialised farming systems under study.

The results of this analysis show a differentiated impact of the new environmental obligations of greening according to the characteristics of farms, their location and their specialisation, with stronger impacts, in terms of change in the farm gross margin, especially for the highly specialised farms of maize production in Northern regions and, more generally on farms localised in the plain areas.

With regard to the remuneration of public goods provision through the green payments, data show how the choice of the regionalisation process is key in determining the level of compensation: under our hypothesis of regionalisation the green payments do not compensate the decrease of gross margin for one typology of representative farms (the ones specialised in maize production), while it does fully compensated another typology of farms (those specialised in wheat production). This confirms that green payments as they have been designed in the new CAP do not take into account the specific and local features, and the consequent different costs of production of the public goods in agriculture in different farming and in the different areas. Different modality of calculation of the green payments (i.e. at the single farm level), would not solve this problem, which is mainly related to the fact that the amount of payments for the provision of public goods is not calculated on the basis of additional costs and loss of income as in the case of voluntary agri-environmental schemes, but as a share of first pillar support. These results strengthen the critic positions about the greening as being not enough selective and, actually, being prescriptive and rule-based, and in the end not effectively rewarding pro-active behaviours among farmers. This type of approach ends up being too similar to that of cross compliance to justify it as a new and different tool.

The idea of addressing the greening of the CAP with a horizontal, standard approach does, in many ways, contravene many of the principles on which the new CAP and Europe 2020 rest: the importance of local factors, the interaction between these and the local actors, the importance of the natural endowments and the way they interact with human activities. These critiques are not related to general idea of greening the CAP, but rather on the contradictions of introducing environmental rules related to the amount and the distribution of direct payments rather than to the willingness and capacity of farmers in providing public goods and to the additional costs for farmers to adopt more sustainable practices.

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