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Wine Economics and Policy 4 (2015) 45–52

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# Implementation of green harvesting in the Sicilian wine industry: Effects on the cooperative system

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Received 23 December 2014; received in revised form 7 April 2015; accepted 28 April 2015

Available online 7 May 2015

## Abstract

This paper contributes to assessing the effectiveness of the GH measure to contribute in reducing the supply of wine grapes, and thus contrasting the fall of wine prices in those years when especially abundant productions are expected. By analysing the application of this measure to the Sicilian wine sector during the three-year period (2010–2012), we assess its effects on the regional wine cooperative system. The results from the analysis of the statistical data show that the GH measure was successful in terms of the number of applications, the supported area and financial expenditures, and contributed with other factors to determining a reduction in wine grape production. The empirical survey shows that GH has been contributing to contrast the fall of wine prices in this region and helping the recovery of the wine market. However, an increase in operating costs as well as difficulties in the planning activities of the cooperatives has been recorded.

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*Keywords:* CMO for wine; Ex-ante market crisis measure; Cooperative system

## 1. Introduction

Over the last few years the world wine market has undergone profound structural changes, in terms of both market supply and demand (Mariani et al., 2012; Vrontis et al., 2011a; Vrontis and Pappasolomou, 2007). Old wine producers, such as France, Italy and Spain, leave room to new producers, among which Argentina, Chile, Australia and South Africa, leading to a significant geographical change of the global productive scenario. The demand for wine has also registered a geographical change, with a fall in the traditional markets in line with the social changes that have occurred through time (Contò et al., 2014; Corsi et al., 2014; Crescimanno and Galati, 2014;

Pomarici and Vecchio, 2014), and an increase in new consumer markets, especially Russia and China.

In particular, the European Union (EU) wine industry, despite a wealth of complex regulations, has suffered in the recent past from structural imbalances caused by the surplus wine production, the concurrent steady reduction in wine consumption, the slower growth in EU exports and the growing competition from new world wines (European Commission, 2006a, 2007a; Čačić et al., 2012; Meloni and Swinnen, 2013; Gori and Alampì Sottini, 2014). To cope with these issues a new Common Market Organisation (CMO) for wine has been launched in 2008 and then reviewed within the general reform of the CAP 2014–2020. Besides tending towards a greater equilibrium between supply and demand, the CMO intends to increase the competitiveness of EU producers in foreign markets. Among the measures adopted, the green harvesting (GH) consists in the “total destruction or elimination of grape bunches while still in their immature stage” in order to restore a sustainable equilibrium in the EU wine market, and to contain the collapse in the product price for the producer. The measure has been implemented in Italy,

Peer Review under the responsibility of UniCeSV, University of Florence.

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<http://dx.doi.org/10.1016/j.wep.2015.04.003>

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which in 2012 has been the second most important wine producer in the EU (42.7 million hl), and in Slovenia and Cyprus, despite their marginal role in terms of wine production (respectively, 849.8 thousand hl and 84.3 thousand hl) (Eurostat, 2014; Vrontis et al., 2011b). The main reasons that led these two latter countries to adopt the GH can be ascribed to the importance of the wine sector in their economy, and also to the social (family farms involved in production of grapes), environmental and cultural aspects of viticulture and wine production (Vrontis and Paliwoda, 2008; Bojnec, 2006; Noev and Swinnen, 2001).

In Italy, the most active and receptive region for this measure has been Sicily. Sicily is one the most important wine-producing regions, not only because of the quality of the productions but also for the volume of wine production (Chinnici et al., 2013; Di Vita et al., 2013). Among the 9 measures introduced by the Italian National Support Programme (NSP) for wine, the most successful in Sicily, for the financial years 2010–2012, has been the GH, with the highest relative expenditure, equivalent to just over 40 million euro (RRN, 2013). The market recovery in 2012 has pushed the Sicilian regional administration not to provide any tender in the years 2013 and 2014 (differently compared to other Italian regions), despite the pressures from some producers' organisations. In general the GH replaces the distillation measure of the previous CMOs for wine, and strongly implemented by Sicilian wine cooperatives in the past (Nesto and Di Savino, 2013). The adoption of GH has fostered a strident criticism, in particular from the operators of the Sicilian wine cooperatives; these latter continue to be a vital economic resource, especially for growers with small vineyard plots, turning nearly 80% of the regional grapes production in wine (Sarnari, 2011; Schimmenti et al., 2014).

In order to assess the effectiveness of the GH measure to contribute in reducing the supply of wine grapes, and thus contrasting the fall of wine prices in those years when especially abundant productions are expected, an empirical survey on the Sicilian cooperative system has been carried out. In particular, the impact of this measure is analysed with reference to the grape growers' cooperatives operating in the western part of the Island (Trapani, Agrigento and Palermo) where the wine industry holds a significant importance in economic and social terms and the GH registered its quasi-entirety of adhesions at a regional level (99.9% in the three-year period of 2010–2012).

## 2. Changes in the CMO for wine

The peculiarities of the EU wine sector are reflected in the complexity of the policies adopted over the years and in the framework regulations. The CMO for wine, born in the early 1970s, has always been distinct from the others in agriculture because, in addition to common problems, it has had to deal with questions that are specific to the sector, such as regulations governing the control of, and reduction in, production potential, the movement and introduction to consumption of

viticulture products, the oenological practices and treatments as well as the regulation of the quality of the wines.

The 2008 reform, defined by the Regulation (EC) No. 479/2008 (Regulation abrogated and merged into the single CMO regulated by the Regulation (EC) No. 1234/2007), has been necessary both in relation to the need to correct the measures adopted in the 1999 reform, and in relation to more general changes in the Common Agricultural Policy (CAP). The main reasons that have led to a further reform of the wine CMO must be sought both in a persistent condition of imbalance between supply and demand within the EU market, underlining the ineffectiveness of the measures adopted in the previous regulation, and in a progressive loss of competitiveness of EU wines in the international market to emerging producers (Galati et al., 2014; Begalli et al., 2009). This recent development is due to a greater penetration of non-EU wines on the EU market thanks to a more favourable price quality ratio and to more effective marketing strategies. This legislation seeks to correct such inefficiencies by fostering the shift from an intervention based primarily on market measures towards an intervention aimed at increasing the vine growers' competitiveness, in line with the guidelines of the new CAP (Pappalardo et al., 2013). Together with the progressive elimination of traditional market measures (including potable alcohol distillation, crisis distillation and the use of concentrated musts, known as phasing out measures), the 2008 wine CMO has resulted in the consolidation of two measures previously adopted with Agenda 2000 (restructuring and conversion of vineyards and distillation of by-products of winemaking), and also the introduction of six more measures aimed at improving the competitiveness of the production chain during its various phases (promotion on third-country markets and investments), reducing risks and crises (green harvesting, mutual funds, harvest insurance) and cutting the link between subsidies and production with the decoupling of direct aid to producers (single farm payment) (European Commission, 2006a, 2006b, 2007a, 2007b, 2007c; Meloni and Swinnen, 2013). The reform aims at the reduction of wine surpluses via ex-ante measures (e.g. GH) rather than ex-post measures (aid with private storage or distillation) (Iannettoni, 2009; Meloni and Swinnen, 2013). With the same goals, referring to the control of the production capacity, the Regulations (EC) Nos. 1234/2007 and 479/2008 introduce the grubbing-up scheme until the end of the wine year 2010–2011 and maintain planting rights until the end of 2015. Concerning this latter issue, the Regulation (EU) No. 1308/2013, included in the more general reform of CAP for 2014–2020 period, replaces provision concerning planting right regime with the new regime of authorizations for vine planting from 2016 to 2030. Whether on the one hand the reform introduces the possibility of giving flexibility to the production potential, on the other side it could produce considerable relevant implications for the market equilibrium of grape's production such as oversupply, general fall in prices and reduced negatively affected producer's incomes. The latest regulation proposes some other substantial modifications concerning the wine industry. Referring to the support measures,

eight of them remain, due to the abolition of the single payment scheme (a system of direct payments will replace, from 1st January 2015, the single farm payment) and the introduction of the new measure “innovation in the wine sector” to increase the marketability and competitiveness of EU grapevine products.

Among the measures adopted in 2008 in order to reduce risks and crises, the GH has been maintained in the latest CAP reform as a short-term intervention in order to reduce the yield of the supported vineyard to zero, thus acting upon the productive surpluses. The measure consists in a flat rate payment per hectare, determined by each concerned MS, not to exceed 50% of the sum of the direct costs of the destruction or removal of grape bunches and the loss of revenue related to the destruction or removal of grape bunches.

For the 2009–2013 period, the overall expenditure for GH amounted to a little less than 50 million euro, 1% of the total EU-27 NSPs. Among the EU MSs, Italy, Cyprus and Slovenia are the only countries that planned resources for GH in their 2009–2013 NSPs. As can be seen in the Table 1, the expenditure for GH is concentrated almost entirely in Italy (97.7%).

For the 2014–2018 period, Italy and Bulgaria are the only MSs to have planned resources for GH, respectively 10 million euro per year and 600 thousand euro per year (DG AGRI-C3, 2013).

### 3. Literature review

Due to the limited take-up of the GH among MSs, there are to date no bibliographic references about its implementation and effects, other than the European Commission (2012) evaluation of CAP measures applied to the wine sector and an empirical study focussing on GH application to the Sicilian wine sector (Schimmenti et al., 2013a) – the only case study available as stated by the European Commission (2012). Brief discussions can be found in the literature that refers to the characteristics of the 2008 CMO reform in its entirety (Iannettoni, 2009; RRN, 2012, 2013). Most economic analyses and official documents are focused, in fact, on the programming and/or evaluation of the CMO for wine, especially on the regulatory measures and market intervention (e.g. planting rights limitation, premium for definitive abandonment and grubbing-up scheme, distillation measures, restructuring and varietal conversion measure), that over the years have caused major distortions and overproduction problems in the wine sector instead of contributing to a solution (Grant, 1997;

European Commission, 2002, 2004, 2007a; Conforti and Sardone, 2003; Iannettoni, 2009; Brunke, 2010; Salies and Steiner, 2011; European Court of Auditors, 2012).

With specific reference to the changes introduced by the 2008 CMO reform, Chiodo and Ammassari (2008) had examined its effects on the adopted strategies and performance of the Italian cooperative system. They identify the actions to be taken to ensure the survival of cooperation in its rationalisation as well as its quick market orientation. Grape growers' cooperatives are a vital economic resource, especially for farmers with small vineyard plots, in Italy in general (Chiodo and Ammassari, 2008) and in Sicily (Di Vita et al., 2013; Schimmenti et al., 2014). In the recent past Sicilian wine cooperatives experienced a significant reduction in number, especially due to the progressive reduction and final elimination of the significant financial support coming from EU distillation measures (Chiodo and Ammassari, 2008) as well as to product management issues or to the phenomena of mergers and acquisitions (Torcivia, 2012; Schimmenti et al., 2014).

### 4. Materials and methods

The impact assessment of the GH implementation was preceded by a descriptive analysis of the Sicilian vitiviniculture sector using various sources. The structure of the viticulture system in Sicily was first analysed via the agricultural census data of the Italian National Institute of Statistics (ISTAT), comparing structural data on farms between 2000 and 2010 (5th and 6th General Agricultural Census). Subsequently, the direct collection of data from the web page of the National Agricultural Information System (SIAN) allowed us to quantify the number of Sicilian grape growers' cooperatives operating in wine production in 2001 and in 2013. The Sicilian vitivinicultural scenario has been completed by analysing the data related to the area under wine grape vines and the wine grape production in Sicily, as well as the volume of wine by wine category<sup>1</sup> provided by the Regional Department of Agriculture, Rural Development and Mediterranean Fisheries, Unit 30-Wine CMO interventions (RDA). This latter analysis covers the 2007–2013 period, which comprises the three previous years (2007–2009), the application of the GH (2010–2012), and the subsequent year (2013). The analysis of the GH implementation in Sicily takes into account the current regulatory framework as well as various other sources of information and statistics (EU Regulations, DG AGRI,

Table 1  
Green harvesting expenditure (thousand euro) (2009–2013 period).  
Source: Authors' own creation from DG AGRI-C3, 2013 data.

MSs	2009	2010	2011	2012	2013	Total	%
Italy	–	16,428	23,976	7,569	752	48,725	97.7
Cyprus	–	226	525	66	–	817	1.6
Slovenia	131	139	65	–	–	335	0.7
<b>Total GH</b>	<b>131</b>	<b>16,793</b>	<b>24,566</b>	<b>7,635</b>	<b>752</b>	<b>49,877</b>	<b>100.0</b>

<sup>1</sup>The Regulation (EC) No. 479/2008 establishes a revision of the designation of origin and the harmonisation of the classification systems of wines with those of the other agro-food products. According to this regulation, wines produced in the EU are classified into wines with designation of origin (PDO – Protected Designation of Origin and PGI – Protected Geographical Indication) and wines without designation of origin (wine and wine with the indication of vine), unlike the previous EU classifications that subdivided wines in table wine, table wine with IG and V.Q.P.R.D.. Nowadays, Italian wines can be labelled with the specific traditional appellations (DOC, DOCG and IGT) singularly or jointly with the new EU expressions (PDO and PGI) as stated in the Italian Legislative Decree No. 61/2010.

ISTAT, Ministry of Agriculture, Food and Forestry-MiPAAF, Agency for Agricultural Payments-AGEA, National Rural Network-RRN, official regional statistics). In particular, we have considered the number of approved applications, the amount of granted aid, the relative surface area also based on wine designations.

In order to assess the effectiveness of the GH measure a direct survey has been carried out using an appropriate structured questionnaire. The initial version of the questionnaire was reviewed and pilot-tested by professionals, in order to improve the clarity and understanding of the questions. The final version, administered face-to-face to the managers of the wine cooperatives, consists of two main parts. The first part includes questions about the volume of grapes by wine designation of origin and the correspondent prices paid to members during the last 6 grape harvests (2007–2012). The second part contains the main opinions of the managers with regard to the effects produced by the “three-year” application of GH both on the Sicilian wine industry (2010–2012), and on the cooperative system. Respondents were also asked to state their degree of agreement or disagreement on the GH implementation, and in case of disagreement to identify the main bottlenecks in terms of efficiency in the management and organisation of productive activities.

The direct survey involved all the 30 wine cooperatives receiving regional financial support in 2010, as an *una tantum* intervention, not repeated in the biennium immediately subsequent, to cover the increased operating costs resulting from their members implementing the measure. These wine cooperatives are located in the western area of the Island – in the provinces of Agrigento (AG), Palermo (PA) and Trapani (TP) – which, besides being responsible for more than 4/5 of the Sicilian area under wine grape vines, has recorded almost the whole of the region's grape growers who benefited from the measure. More in detail, the surveyed cooperatives are mainly situated in the province of TP (17 units) while the others are in the provinces of PA (7) and AG (6).

## 5. The Sicilian vitivinicultural sector

Over the last three decades, the Sicilian viticulture sector has witnessed a deep transformation that we can generally refer to the CAP, which, focusing more and more on the improvement of wine production quality, have pushed a modernisation process both in the vine and in the cellar (Asciuto and Bacarella, 2008; D'Amico et al., 2011). Following the change in consumption habits (Lanfranchi et al., 2014a, 2014b), Sicilian grape growers have increased red wines supply, orienting their production towards high quality autochthonous wines, among which “Nero d'Avola” (Di Vita et al., 2013; Schimmenti et al., 2013b), thus stimulating the regional vineyard nurseries to invest in product and process innovation in order to obtain better clonal material (Borsellino et al., 2012). Moreover, various firms (private as well as cooperative) carried out a modernisation process paying more and more attention to the improvement of product quality, to its

packaging and to its development through marketing strategies (Schimmenti et al., 2014; D'Amico et al., 2011).

According to the data in the 6th General Agricultural Census, Sicily, with its 114,291 ha of wine growing surface area (with an average farm size of 2.81 ha), is the most important Italian region in terms of area under vine.

When compared with the data from the previous census, there is a decrease of 6.2% in the regional area under vine, which is slightly lower than Italy. Sicilian vitiviniculture is characterised on the one hand by the concentration in the western part of the island (85% of the overall wine growing surface area) and on the other by a traditional structural conflict between a large number of small family businesses and a few large production businesses which concentrate on the production of quality wines and cover the whole productive process including the supply chain, also by means of the commercialisation of wine in foreign markets (Asciuto and Bacarella, 2008).

Because of the small size of the production units, the cooperative phenomenon in the wine sector plays a crucial role in Sicily, where more than 80% of total production is condensed in wine cooperatives (Sarnari, 2011; Schimmenti et al., 2014). According to data from the SIAN, around 59 grape growers' cooperatives (54 of which are located in the three studied provinces) operated in grape and wine production in 2013, a number quite lower if compared to the 103 units recorded in 2001; although the number has been reduced by nearly 43% in 13 years, the share of the regional wine grapes production destined to cooperatives has remained constant. This trend favours a concentration and an intense reorganisation of the cooperative sector. In the recent past Sicilian cooperatives have strongly suffered from the reduction of vineyards (also due to the grubbing-up scheme), lack of capitalisation, and low returns on bulk wine sales. A further acceleration of the necessary process of transition to a market-oriented system also came from the progressive reduction, starting from the 1990s, until the current elimination of EU distillation subsidies, which represented a significant financial support for Sicilian wine cooperatives, both for the poor quality of the wine (and therefore its cheap price), and because the aid represented a convenient and secure flow of money in business management (Chiodo and Ammassari, 2008; Nesto and Di Savino, 2013).

The dynamics of the Sicilian wine industry in 2007–2013 period have been analysed using data from ISTAT and data provided by the RDA, which in turn used information from the SIAN database and the AGEA.

Table 2 shows a recessive trend as regards the area under wine grape vines, likely to be due to the implementation of interventions provided by the CMO for wine, whilst the volume of grapes produced shows a slightly downward overall trend in face of wide annual fluctuations which are not only attributable to climatic, phytosanitary and surface trends but also to the application of GH during 2010–2012 period (Schimmenti et al., 2013a).

Wine production, according to the same source, during the seven-year period follows more or less the same trend as the

Table 2

Main indicators of Sicilian wine sector (2007–2013 period).

Source: Authors' own creation from RDA and ISTAT data.

	2007	2008	2009	2010	2011	2012	2013
Surface area under wine (ha)	119,901	118,580	117,135	114,502	112,529	110,657	107,900
Wine grape production (tonnes)	572,021	901,454	852,085	633,809	493,766	647,348	836,041
Wine (hl)	3,941,308	5,025,021	6,242,514	4,475,316	3,494,081	4,668,061	6,150,007
of which:							
Wine	2,641,120	3,233,913	3,036,304	1,768,819	1,144,355	1,892,220	2,789,261
PGI wine	1,147,173	1,561,600	3,039,200	2,554,699	2,183,170	2,107,171	2,630,513
PDO wine	153,015	229,508	167,010	151,798	166,568	759,685	730,233

Prior to 2011, in Italy PDO was DOC and DOCG, PGI was IGT and Wine was Table wine.

production of wine grapes. In particular, the entire regional production, made up in 2013 of mainly Wine (45.3%) and PGI wine (42.8%) followed at a considerable distance by PDO wine (11.9%), has greatly changed in the period under review, showing that the Sicilian vitivinicultural sector has moved towards production of vineyard-designated wines.

Analysis of the production data shows the effects of the introduction of GH as from 2010, in synergy with other factors, with an inversion of the trend in 2012 in relation to the reduction in financial budget and, consequently, in its implementation, compared to previous years.

## 6. Green harvesting implementation in Sicily

Sicily spent the largest share of financial support for GH during the 2010–2012 period, absorbing 88.6% of the national budgetary envelope (81.4% of the total EU expenditure for this measure) distributed over the 2010–2013 four-year period. It is noteworthy that even though in the 2013 financial year 30 million euro were made available on a national level (with Italian Ministerial Decree No. 3525 of 21/05/2013, another 10 million euro were earmarked for the measure for 2014) the measure was not activated in Sicily (on the contrary, it was activated in Lombardy, Sardinia, Campania, Calabria and Apulia).

Nevertheless, the implementation of GH has produced contrasting views among the people operating at different levels of the regional vitivinicultural sector. If on the one hand it has been a great success in terms of adhesion among regional grape growers, on the other hand it has also produced several negative opinions: some view it as damaging the supply and operating procedures implemented by the wine cooperatives (Pomarici and Sardone, 2010; Schimmenti et al., 2013a) and as an additional form of excessive state aid to the revenue of agricultural producers.

The conditions for accessing the measure in Sicily instructed that the harvest would only be conducted via a manual method and that it could not be carried out over two successive seasons on the same plot of the vineyard. The latter, at the time of the tender, had to be planted since at least 4 campaigns and also be registered in the harvesting declaration of the previous season. During the first two seasons of implementation, the minimum farm surface area was established at 1 ha and the maximum at

6 ha; the maximum surface area, however, could be extended to 20% of the area above 6 ha, up to a maximum of 15 ha. The third participation session reduced the maximum area to 3 ha which could be extended to 20% of the excess area up to a maximum of 6 ha.

Since the first tender, the RDA has regulated the aid per hectare according to the vineyard designation concerned: €1500/ha, €1700/ha and €2000/ha respectively for grapes destined for production of Wine, PGI wine and PDO wine.

Compared to the first two tenders, the third, as fewer financial resources were available, linked the funding to a regional classification taking into account a specific score attained by adding points gained on the basis of precise evaluation parameters (qualification of the applicant; participation in the first tender; age of the vineyard).

During the three years of participation, the total financial execution was slightly over 40 million euro, 50% of which were expended in 2011. In particular the three western provinces of Sicily absorbed around 99.1% of the total, with TP receiving 76.0%.

In the three 2010–2012 grape harvests, Sicily had 8732 applications financed and registered the highest degree of adherence equivalent to 87.8% of the national total (9947 applications over 2010–2013): the other regions involved were Campania (406 applications), Marche (242), Umbria (149) and Piedmont (117). In Sicily adhesion to GH was concentrated in the province of TP (73.9% of the total), AG (15.4%) and PA (9.7%). A close examination of the trends relating to the applications financed in the three provinces analysed shows a boom in requests during the second tender, namely more than 50.0% compared to the first one (Fig. 1). In the last tender, however, there was a large reduction in the number of requests mostly due to the lesser financial eligibility from MiPAAF.

The area under wine grape vines benefiting from financing in the same period was equivalent to nearly 24,530 ha, concentrated in the province of TP (75.9%), PA (13.1%) and AG (10.0%). Coming to vineyard designation, it emerges that PGI benefited most from GH (equivalent to 67.8% of the total supported area) followed by Wine (28.2%) and PDO (4.0%).

As regards the impact on wine cooperatives, the smaller quantity of grapes produced by the vine growers and delivered to the cooperatives caused an increase in operating costs, urging the RDA in Sicily to undertake a supporting measure in

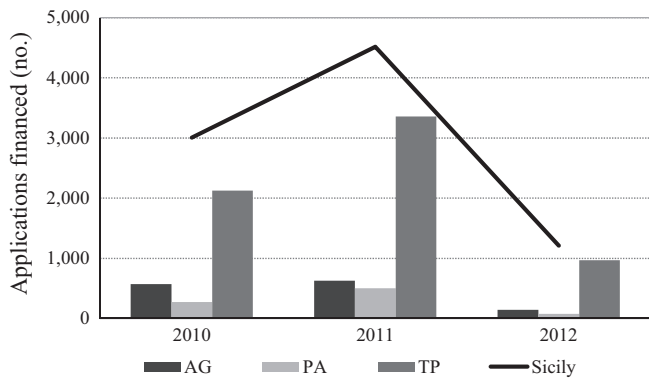


Fig. 1. Applications financed in the period 2010–2012. Source: our elaboration on RDA data.

2010 restricted to the wine cooperatives whose members had adhered to the first GH tender. In particular, the funding was differentiated according to the surface areas resulting from the cadastral plan relating to the members in the same year, amounting to €250/ha, €220/ha and €200/ha for the wine cooperatives with surface areas respectively between 200 and 1000 ha, between 1001 and 2000 ha and greater than 2000 ha. According to the figures provided by RDA, 30 wine cooperatives benefited from a total funding of approximately 1.5 million euro.

## 7. Results

This study has allowed to verify the effectiveness of the green harvesting measure as an instrument to contrast the fall of the prices of wine. In particular, the direct survey reveals the impact of the adoption of this measure on the regional cooperative system with particular reference to the effects on the price paid for the grapes delivered by their members.

The analysis of the volume of grapes delivered to the cooperatives during the last 6 grape harvests (2007–2012), except the 2007 production which was lower due to a bad attack of downy mildew, shows a significant decrease compared to 2010 (–27.7% compared to 2009) coinciding with the first year of GH implementation, followed by an almost identical result the following year (–26.0% compared to 2010). As shown in Fig. 2, a reversal of this trend was registered in 2012: in accordance with the figures supplied by RDA, there was an increase in production delivered to the wine cooperatives, which reached 287,257 tonnes of wine grapes (+47.3% compared to 2011). It was firstly due to a reduction of the financial resources assigned by MiPAAF to the GH measure in 2012, and secondly to the conditions for accessing the measure (different from those applied in the previous 2 years), which linked the support allocation to a series of objectives parameters, as previous explained.

In particular, with regard to the types of grapes, the drop in volume was mainly in the grapes destined for the production of Wine and in the PGI grapes, as opposed to those destined for PDO wine which were hardly affected by the implementation of GH. After a decrease in 2010 there was a rapid increase

stemming from the adhesion of several enterprises to the investment measure by the NSP.

The analysis of the prices granted to the members of wine cooperatives, which until 2009 registered a gradual decline, shows a benefit produced by the implementation of GH measure in terms of increasing price. More precisely, the grapes with the best performance are those used in the production of Wine and PGI wine, that represent the biggest share of the grapes used in wine production in Sicily, as opposed to the PDO grapes. The unexpected lower commercial value of PDO grapes is due, according to several growers interviewed by us, to the low quality value of the cultivar with this designation delivered by the members to the cooperatives.

An analysis by Sicilian provinces shows a similar trend, but a greater price is paid for the grapes delivered to the TP cooperatives. This could be due on the one hand to the ability of the firms to make financial savings thanks to the high volumes produced, and on the other hand to the competition between the many wine cooperatives operating in one of the most substantial areas of vitivinicultural industry in the EU.

If on the one hand the implementation of GH had a positive impact on vine growers in terms of a price increase for the grapes delivered to cooperatives, on the other hand the adoption of this measure had a negative impact on the wine cooperatives. The survey shows an increase in average fixed operating costs, due to the smaller volumes delivered, which went from €70–80/ton to €140–160/ton of grapes, and was only partly compensated for by financial support granted on a regional level equivalent to €20/ton for the 2010 grape harvest. Finally, according to the managers interviewed in the survey, it is felt that there is a loss not only in economic and social terms connected to the entire vitivinicultural industry which employs thousands of people, but also a loss relating to the value of the farms and the exclusion from some markets due to product shortage, but also at an ethical level related to production destruction.

## 8. Conclusion

This study appraises the salient aspects regarding the implementation of GH measure in the only available and significant EU case study, i.e. Sicily, which during the three-year period (2010–2012) obtained, on a national level, almost all subsidies and relative surfaces as well as the EU expenditure for this measure.

This research emerges that within the three-year period the number of applications, the supported surfaces and financial expenditures recorded a growing trend between the first and second year of implementation, with a significant decrease during the last year. At the same time, the analysis shows a reduction in wine grape production during the first biennium, due in part to GH implementation, in conjunction with an increase in the production of wines with a designation of origin and to favourable market trends, and a small increase in the prices of grapes after the 2010 harvest.

The direct survey carried out within the Sicilian grape growers' cooperative highlighted on the one hand that GH has

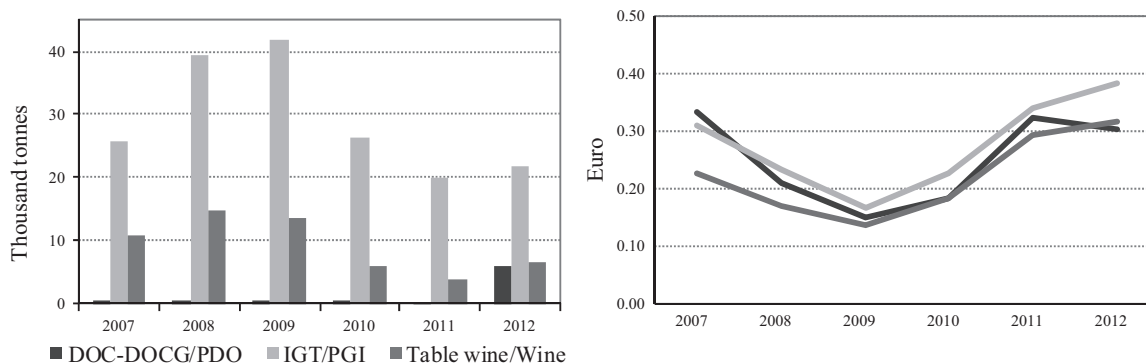


Fig. 2. Evolution of the wine grape production delivered to wine cooperatives and the price paid in period 2007–2012. Data relating to 2012 price is a forecast. Source: own calculation on survey data.

proved to be an effective tool together with other multiple measures both in reducing the supply of wine grapes, thus contrasting the fall of wine prices in those years in which particularly high harvests are expected, and in helping recovery of the wine market. The achievement of the market balance between supply and demand drove the Sicilian regional administration not to activate the GH measure in the years 2013 and 2014 (differently from what happened in other Italian regions). On the other hand, the GH measure also damaged the Island's wine cooperative system. The smaller volume of grapes delivered to the cooperatives, according to the managers interviewed in the survey, caused an increase in operating costs as well as difficulties in the programming of the cooperatives' activities affecting all members across wine cooperatives (regardless of whether they participated in GH). The main reason of such result is due to conflicts between grape growers and the cooperatives to which they adhere, highlighting structural and management problems. In fact, the Sicilian cooperative system is mainly oriented towards the production of bulk wine, of low quality and not enough valued, resulting in a low remuneration of the grapes conferred by members and in scarce safeguard of their interests. The massive adhesion of these latter to the measure is, in fact, due to the possibility of obtaining guaranteed subsidisation, although low if compared to the price that they could receive by their cooperative. At the same time the GH measure definitely entailed strong repercussions on all satellite activities of the wine industry, particularly in the concerned territories.

The main implication of our study is at a political level, because it allows us to assess the effectiveness of the measure in solving short term market crisis, showing its inadequacy to solve the structural problems of the sector. Although concentrating our attention on the wine cooperative system could seem a limit of the study, it actually allowed to verify the consequence of the GH implementation on the entire wine sector: on grape growers for their massive adhesion, on wine cooperatives for higher unitary management costs, and on other activities related to wine production.

In order to reduce the negative impact of the measure on the wine cooperative system in case of implementation of anti-crisis measures, the cooperative should manage a collective request in order to better plan winery production and business

activities. Moreover, many Island's cooperatives, in order to better remunerate the grapes delivered by the members and encourage them to produce high quality grapes, should open to a greater market orientation (as detected in a limited number of Sicilian wineries and in many other Italian regions) enhancing production and closing the wine production chain.

Future studies should focus on the motivation and the main determinant that push grape growers to adhere or not adhere to the GH in order to verify whether this acts as a short period market intervention or rather as a social cushion. Furthermore, it could be interesting to carry out an EU cross-national and/or an Italian cross-regional comparison of GH implementation.

## Acknowledgements

The paper is a joint effort of the five authors. E. Schimmenti coordinated the whole research and wrote the Sections 1 and 4; A. Galati drafted Section 2 and jointly with M. Crescimanno the Section 7; V. Borsellino wrote the Sections 3 and 5; G. Pisano wrote the Section 6; Section 8 was drawn up by all the five authors.

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