Regulation of supply for Cheese with a protected designation of origin or protected geographical indication

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Introduction

Since 2007, the agri-food market has registered high price volatility, which has led to significant problems, particularly for farmers. At the same time, the European Union is completing the dismantling of the old market policy, which is based on the direct tools of agricultural policy (e.g., quotas and guaranteed prices), and is increasing the adoption of indirect tools[1], which do not act directly on the market but on the actors of the market. One of these tools, which is the latest to be adopted, is the regulation of supply with a protected designation of origin and a protected geographical indication (DOP and IGP), which was introduced in 2012 with the approval of the "Milk package".

This article, following an introductory overview, focuses on an assessment of the effect of the regulation of the supply of cheese with a protected designation of origin or a protected geographical indication through the case study of a Grana Padano Dop dairy farm. This is a preliminary work without extendable research results but is useful to understand the potentiality of this new tool of agricultural policy.

The CAP evolution

The main goals of the Common Agricultural Policy CAP were the enhancement of agricultural production, income stabilization and support to family-owned businesses. To achieve such targets, the CAP was largely reliant on extremely invasive tools, such as market measures and price control. Such types of support have progressively evolved to respond to the changes in the agri-food market and to the new targets set by the CAP (De Filippis F., Henke R, 2013).

The recent CAP reforms (Fischler, Health check and Europe 2020) have introduced new goals, such as competitiveness, external sustainability, public goods and rural development, to be achieved through new tools. In these reforms, the market measures have been

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[1] The agricultural policy tools that strive to stabilize prices and markets can be divided into two broad categories: *direct* tools of the public body, which strive to control imports, stabilize and guarantee agricultural prices in accordance with production, and control and manage stocks and production; *indirect* tools, which strive to favour the leadership of agricultural and agri-food enterprises through an improved relationship between producers and buyers, and self-organization by means of producers' associations, cooperation, contracts and inter-professions.

considerably scaled down and simplified (with the combination of twenty CMOs into one in 2008), whereas direct payments have been almost totally decoupled and transformed into a new form of support, the single payment scheme (Frascarelli, 2014).

Over the last decade, the emergence of a phenomenon has affected the CAP evolution: price volatility. With the concept of volatility, we intend the variation an economic variable in time; in this case, the price. This variation is not always a negative phenomenon, particularly when such a variation is not particularly high or ascribable to a specific model. The problem emerges when the variation is high and not predictable, which generates a situation of uncertainty among the sector operators (Oecd/Fao, 2011). Because this phenomenon is particularly relevant when involves agricultural commodities, the European Union has indeed extensively analysed it (Commission of the European Communities, 2008).

The presence of volatility is strictly connected with the peculiarity of agricultural production and producers' difficulty to align offer with demand, product storage issues, poor predictability of production and rigidity in the demand of agricultural products when compared to their prices (Chatellier, 2011).

As previously noted, the European Union has largely used direct tools during the initial CAP stages. Subsequently, the negative consequences of this approach, as well as the WTO restrictions, imposed a rethinking of the tools then in use; this shifted the attention to indirect tools (Frascarelli, 2014). In addition, there was the need to address the price volatility problem. The intent of the public body is to decrease agricultural policy interventions; thus, this reduces the use of direct tools to provide space for indirect tools, which do not act directly on the market but on the actors of the agri-food chain. The recent European policies, specifically the milk package (Reg. 261/2012) and the new single CMO (Reg. 1308/2013), strongly rely on indirect tools by fostering market transparency and the use of contracts between producers and buyers, as well as dialog within the production chain and producer associations.

The "milk package" and regulation of supply

As noted above, the introduction of indirect tools was gradual; nevertheless, an important change occurred during the restructuring of the dairy sector. Until March 31, 2015, the EU dairy sector was subject to quota restrictions, which has stabilized the price of milk for producers (Chantreuil et al, 2008). To eliminate this system, a "soft landing" plan was implemented, which foresaw a gradual loosening of production constraints to elicit a progressive loss of the value of the quotas. This measure did not result in increased production, whose evolution appears to be controlled by the market conditions, but in the redistribution across different member states of the milk produced in the EU (Rama, 2013).

To plan the future of the milk sector, the European Union has established the High Level Expert Group on Milk. The result from this group consists of seven recommendations for the legislative structure of the milk sector, which were used to devise the new regulation of the dairy sector, namely the "Milk Package" (Reg. 261/2012). According to these seven recommendations, the milk package promotes the use of contracts among the operators of the sector, the use of inter-professional organisations, the use of producer organizations and

the possibility to regulate the supply of cheese with a protected designation of origin and a protected geographical indication (Reg. EU n.261/2012).

Despite the dairy sector's criticisms of this reform, it is apparent that the sector is now largely regulated through the indirect tools of agricultural policy, which have replaced the direct tools (Matthews, 2013).

Regulation (EU) n.261/2012 states that the regulation of the cheese supply with a protected designation of origin can be introduced upon request by a producer's organization, an inter-professional organization or a protection consortium and must comply with the given restraints to avoid violating the rules of competition.

This regulation was enforced in Italy through the decree of the Ministry of Agriculture, Food and Forestry of 12 October 2012[2]. The decree lists the guidelines for devising the plans for the regulation of supply. Furthermore, a special committee is tasked with the assessment of the plans to verify that the latter complies with the guidelines.

Regulation of supply of Grana Padano Dop

Although the European regulation on supply entered into force in 2012, the Consortium for the safeguard of Grana Padano PDO was introduced in early 2004. This regulation of the supply scheme underwent several changes over the years; however, the idea of the Consortium for the safeguard of Grana Padano paved the path to introduce this tool in the EU.

The regulation of the supply scheme adopted by Grana Padano includes the certification system that characterizes most of the products with PDO and PGI.

The current Grana Padano PDO plan covers the planning period from 2013 to 2015 and strives to control the supply to align supply and demand by means of:

consolidation of the presence of the product on the main markets and the acquisition of new marketplaces

quality promotion and safeguard

Specifically, the regulation of the supply plan utilizes 4 tools: (i) regular contribution, (ii) differential contribution, (iii) redistribution of the wheels, and (iv) quality prize.

Regular contribution

On the basis of the global production level of Grana Padano, the Consortium has assigned to each dairy farm a reference point (RP), namely a production quota, to which a so-called "*regular contribution*" corresponds. Over the year, each dairy farms pays a regular contribution on a monthly basis, on average 5€/wheel (the *range* varies from 4,82 €/wheel to 5,48 €/wheel, according to the weight of the wheels) for the number of wheels produced per month.

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[2] Implementation rules of regulation (EC) n. 1234/2007 regarding producers' organizations and their associations, inter-professional organizations, contractual relationships in the milk and dairy products' sector and plans to regulate the offer of cheese with a protected designation of origin or protected geographical indication (GU n.287 of 10th December, 2012).

Actually, the regular contribution varies according to the dairy farm's RP. This contribution is calculated on the basis of production levels; each one represents 5% of the assigned RP. Of this contribution, the first 5% is worth 2,5 €/wheel, and the last is worth 20 €/wheel; there is a substantial charge increase from the 18th level on. Each wheel the dairy produced above the RP entails a regular contribution of 20€, to which the differential contribution is added.

Differential contribution

When the production of one or more dairy farms exceeds the reference point assigned, the Consortium will levy additional contributions in consideration of the need for greater resources to be allocated for qualitative and promotional improvements to market the surplus production; this system is called "*differential contribution*".

The computation occurs at the end of the year, when the Consortium utilizes the final production data for each dairy farm. The number of wheels produced by each dairy is counted and then compared with the RP to determine whether there is a surplus or a shortage. If the number of wheels exceeds the RP, an initial compensation occurs (a mechanism that allows dairies, whose production has exceeded the RP, compensation for their surplus production with the production of other dairies, whose production was lower than their RP), followed by the calculation of the differential contribution.

The differential contribution grows by 1% according to the production levels, with a charge increasing by 5€/wheel per level. Above the 8%, each wheel's differential contribution is 40€.

Redistribution of the wheels

The Consortium, above the set differential contribution, redistributes a given number of wheels, which will proportionally decrease when the threshold is not achieved.

At the end of the year, there is a redistribution that represents 0.5% of the balance point. If yearly consumption, foreign and domestic, is higher than 0.5%, the average value between the number of wheels corresponds to 0.5%. In addition, the number of wheels consumed in excess over the year will be calculated, and the resulting quantity will be reassigned.

Quality prize

To valorise quality, the Consortium has established a quality valorisation criterion as follows:
If the percentage of the dairy farm's premium cheese is higher than 80% of the total, there is a 25% increase in the distribution of the wheels.
If the percentage of premium cheese is 90%, in addition to the abovementioned bonus, there is a 10% reduction in the contribution charge (*Production plan for Grana Padano Dop 2013-2015*).

Methodology

To appraise the effect of the introduction of regulation of supply for cheese with PDO and PGI, we analyse the impact on the production value and on the production costs of Grana Padano. Specifically, through the analysis of revenues and costs, we evaluated how the contribution charges impact the production value and how they influence the dairy farm's choice of the production level to be adopted.

The analysis is based on data regarding a Grana Padano PDO dairy farm in the province of Mantua, to which a production quota representing 48.000 wheels per year has been assigned. Through the analysis of the 2014 financial statements, we determined the production revenues; consequently, we determined the production value, on which the incidence of the contribution charges is calculated. Similarly, through the analysis of the 2014 financial statements, production costs were estimated by grouping the cost items (fixed and variable costs). This methodological approach does not provide a global evaluation of the potentiality of this new tool; however, it allows an estimation of the impact on the producers' choices that will be obtained.

The effect of regulation of supply

As described above, the incidence of the contribution system of the Consortium to safeguard Grana Padano Dop increases according to the adopted production level compared with the production quota assigned to the dairy farm.

The incidence of the contribution charges on the production value has an exponential trend. Specifically, in consideration of a production value of 6,1 €/kg (234 €/wheel) and a wheel weight of 38,3 kg, the incidence of the contribution on the production value moves from slightly more than 1%, with a production level that represents 10% of the RP, to 4,7% when the dairy farm's production level achieves 115% of its RP (Fig. 1).

Figure 1 - Percentage incidence of the average contribution charges on the production value with a growing production level
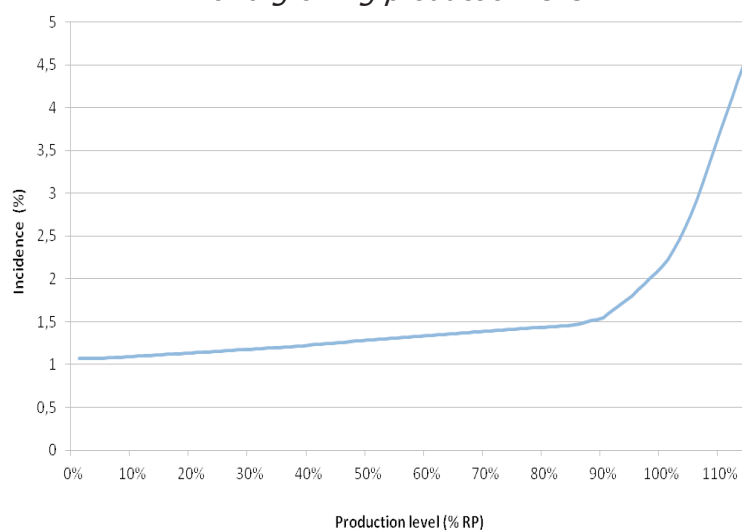
This situation is due to the gradualness of the contribution system and, as illustrated in Figure 1, its incidence becomes more apparent when the RP's 90% threshold is exceeded.

This situation is more evident in Figure 2, which shows the trend of the percentage marginal contribution charge on the production value. When production exceeds 90% of the dairy farm's RP, the contribution charges skyrocket. Above 108% of the production quota, for each surplus cheese wheel, the charge levied in the dairy farm is 25% higher than the production value.

Figure 2 shows that the contribution system remarkably impacts the dairy farm's production choices. Furthermore, we have calculated the contribution charges in relation to the production costs of Grana Padano, dividing them into variable and fixed costs. The by-product revenues were deduced from the variable costs (Tab. 1). This procedure has allowed for the estimation of the average variable costs in relation to the production level.

Figure 2 – Percentage incidence of the marginal contribution charges on the production value with a growing production level
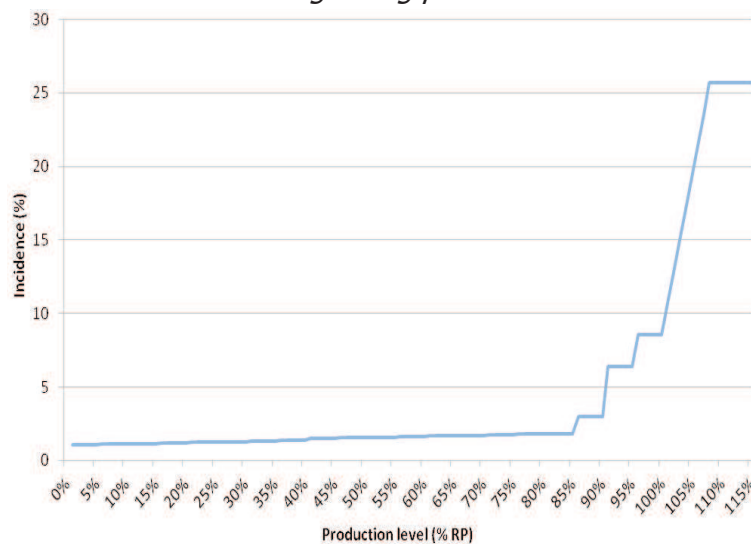
The production cost determination has allowed the simulation of the supply regulation effects on the choice of the quantity to be produced. Specifically, the average variable costs deducted by by-products (4,88 €/kg; 186,8 €/wheel) have been compared with the revenues per wheel and also in consideration of the incidence of production planning.

This procedure was adopted because, in the short term, the Grana Padano dairy farm will be confronted with its own variable production costs, with the market price and ultimately, considering their incidence, with the contribution charges when estimating the most profitable production level. Fixed costs are not included in this simulation because, in the short term, they do not influence the decision regarding what quantity to produce.

Table 1 - Production costs of Grana Padano Dop of the dairy farm in question

Cost items	€/total	€/kg	€/wheel
Variable costs	*12.342.626*	*6,12*	*234,4*
Milk ([1])	11.005.239	5,46	209,0
Raw materials ([2])	376.181	0,19	7,1
Electricity ([3])	249.705	0,12	4,7
Fuel ([4])	586.889	0,29	11,1
Services ([5])	124.611	0,06	2,4
Fixed costs	*1.261.578*	*0,63*	*24,0*
Labour ([6])	870.002	0,43	16,5
Overhead ([7])	80.909	0,04	1,5
Interests and amortization ([8])	310.666	0,15	5,9
Total cost	*13.604.203*	*6,75*	*258,3*
Revenues from by-products			
Serum, butter, storage of the wheels	*2.505.406*	*1,24*	*47,6*
Average variable costs net of by-products (AVC)	*9.837.220*	*4,88*	*186,8*
Fixed costs	*1.261.578*	*0,63*	*24,0*
Total cost net of by-products	*1.261.578*	*5,51*	*210,7*

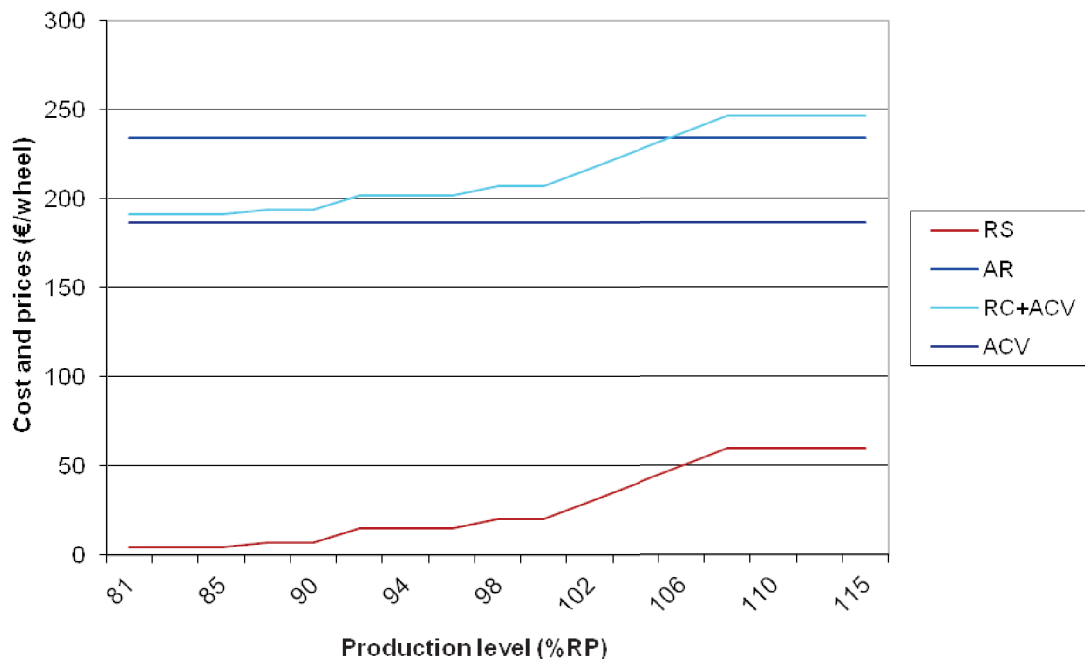*Figure 3: effect of the contribution charges on the production level of the dairy farm*

Figure 3 shows that, if the average variable costs (AVC) are added to the regulation of supply (RS), it is no longer profitable for the dairy farm to produce 106% above its RP because the total costs (RS+ACV) are higher than the average revenues (AR), namely the price of cheese. In this case, the regulation of supply is a drag on the productivity growth. Similarly, if the price of Grana Padano had been lower, the regulation of supply would have guaranteed better margins than a fixed contribution system that is not subject to quotas

(i.e., the system of most products with a designation of origin represented by the certification charges). This finding occurs because, in a situation of low prices, the dairy farm's production tends to decrease below the RP. In this case, the contribution charges have a lower incidence.

Conclusions

The regulation of the cheese supply represents a breakthrough in the agri-food industry, which can be extended to other contexts[3]. The experience of Grana Padano has been the first of its kind in Europe and has been in force for many years.

In this case, the analysis shows that regulation of supply plays a significant role in corporate decision at the moment to choose the level of production to be adopted. Indeed, in a positive price situation, the dairy farm production does not overcome a given threshold; thus, this avoids a generation of surpluses that would enter into the market at least 10 months after the production date when prices may not be as favourable. Similarly, when the product price is low, the setting of the regulation of supply allows the reduction of its incidence, thus helping to improve the revenues for producers.

We must emphasize that the methodological approach used for the analysis does not allow us to obtain extendable results to understand the effects of the regulation of supply in the Grana Padano market. However, the work shows that these new tools affect the choices of the producers. We can hypothesize that the regulation of supply plays a regulating action, which avoids the production surpluses and shortages that often lead to agricultural products' price volatility.

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