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Original article

Domestic Support Measures for Olive Farmers: Case of the Municipalities of Birine and Benhar Wilaya of Djelfa

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Abstract

The Olive Producer Support Estimate Approach in two communes of Djelfa has been applied to explain the economic parameters favoring the state of Internal Support Measures (ISM). Following a 4-month survey involving 150 individuals, the SPSS model processed the data by calculating the Market Price Support (MPS), the Nominal Support Coefficient (NSC) and the NPC (Nominal Protection Coefficient). The distribution of MSI in favor of these producers was mainly favored by one of the factors of production, the agricultural area, which spread rapidly to the detriment of productivity. The total SPM (96324438457 DA) (100 DA, Algerian Dinar = 1.16 Euro) and the NSC were strongly correlated with it, which showed that there is a strong effect of the area on the distribution of the ISM. For yield, there was a significant negative relationship with the NPC (-223.2 to -1.80). The only payments for acreage could not encourage intensification or increase in productivity will be the best precept to be observed by policy makers.

Keywords: Agricultural policy, Olive growing, Support fund, Support estimate, Budget transfers, Arboriculture, Crop production, Productivity, Algeria.

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INTRODUCTION

Olive growing plays an important part in the agricultural economy of the Mediterranean countries (Spain, Italy, Greece, and Turkey). It accounts for 80% of world olive production (Food and Agriculture Organization of the United Nations (COI, 2008; FAOSTAT, 2009). And the top ten producing countries are all located in the Mediterranean areas with 95% of this production (Lahouani, 2009; Mendil, 2009).

This activity, in recent years, is an extension to other regions of Algeria including the willaya of Djelfa, classified as arid; The National Fund for Agricultural Development (FNDA) is the financing mechanism of the PNDA (National Plan for Agricultural Development). Committed in 2008 by the Algerian State, it came into effect in 2009 by the contractor, the Directorate of Agricultural Services (DSA). The FNDA is an original funding model, not a priority culture for accessing funds; olive growing is also concerned (DSA-Djelfa, 2015).

Through this system of public support geared towards farms and rural households, the State is trying to encourage operators to set up mutual funds for producers. Since the 1990s, changes in the agricultural sector have shown that the State is withdrawing from the very act of agricultural production in order to preserve and strengthen a supporting and regulating role (Atchemdi and Ouali, 2016). For this it mobilizes and organizes producers through wilaya chambers of agriculture and mutual funds. it aims in the long term to remove the constraints that the agricultural sector has in order to generate sustainable development (Boudjemaa, 2004).

This financing generally generates economic and social effects, as it enables farmers to exploit their land and acquire technology in terms of seeds, insecticides and agricultural equipment and to achieve their economic objectives (Leroy, 2002; 2011). However, this FNDA may not be suitable for these problems, so do not have an impact on the olive crop in the region. If not, has support from the National Fund for Agricultural Development promoted the productivity of olive growing in the region?

It is accepted that the intensification of olive cultivation, productivity per unit of element contributing to the result, can affect all the elements, a part of them or only one element among the others. Depending on the possibilities and the severity of the blockage, each factor of production used to remove the constraint of production and demand of olive products.

Studies have long cited natural capital, including climate, land, and water, physical capital especially finance, technology, and knowledge as the most important limiting factors in this arid region (Belkhiri et al., 2015; Wilaya-Djelfa, 2015; Atchemdi and Ouali, 2016). The better impact of support from the National Fund for Olive Development would not be to the detriment of any of these elements. At least, the various production support measures would still be insufficient to encourage greater productivity of olive production.

The study on the olive sector based on agricultural support, including the National Fund for Agricultural Development (FNDA). It is undertaken to explain in relation to what economic parameters is evolving the state of support to agricultural producers. This analysis will enable policymakers to readjust their intervention measures in this sector with a view to improving the production per resource used and the well-being of the populations involved.

Materials and Methods

Two methods will be used (Survey and Model SPSS 2015, Version 23) to understand how agricultural support is applied to olive growing to promote. For this purpose, since the study area is very large, it will be interesting to define a representative study area with clear explanatory material for agricultural policy.

Choice of the study area

The work is carried out in the wilaya of Djelfa taking two agricultural territories located in two regions continuously increasing the cultivation of olive trees. These are the communes of Birine and Benhar (Figure 1). Indeed, both communes have a significant development in the production of olives with support in recent years (DSA-Djelfa, 2015).

It is precisely support for agriculture. It is defined as the annual monetary value of gross transfers to agriculture of consumers and taxpayers resulting from support measures for agriculture, regardless of their economic objectives or impact (Organization for Economic Co-operation and Development (OECD, 2016: 2001) It is therefore in Birine and Benhar that the production systems in place offer the best opportunities to take advantage of agricultural support and to assess its impact on the progress of olive growing implying the well-being of farmers be olive growers.

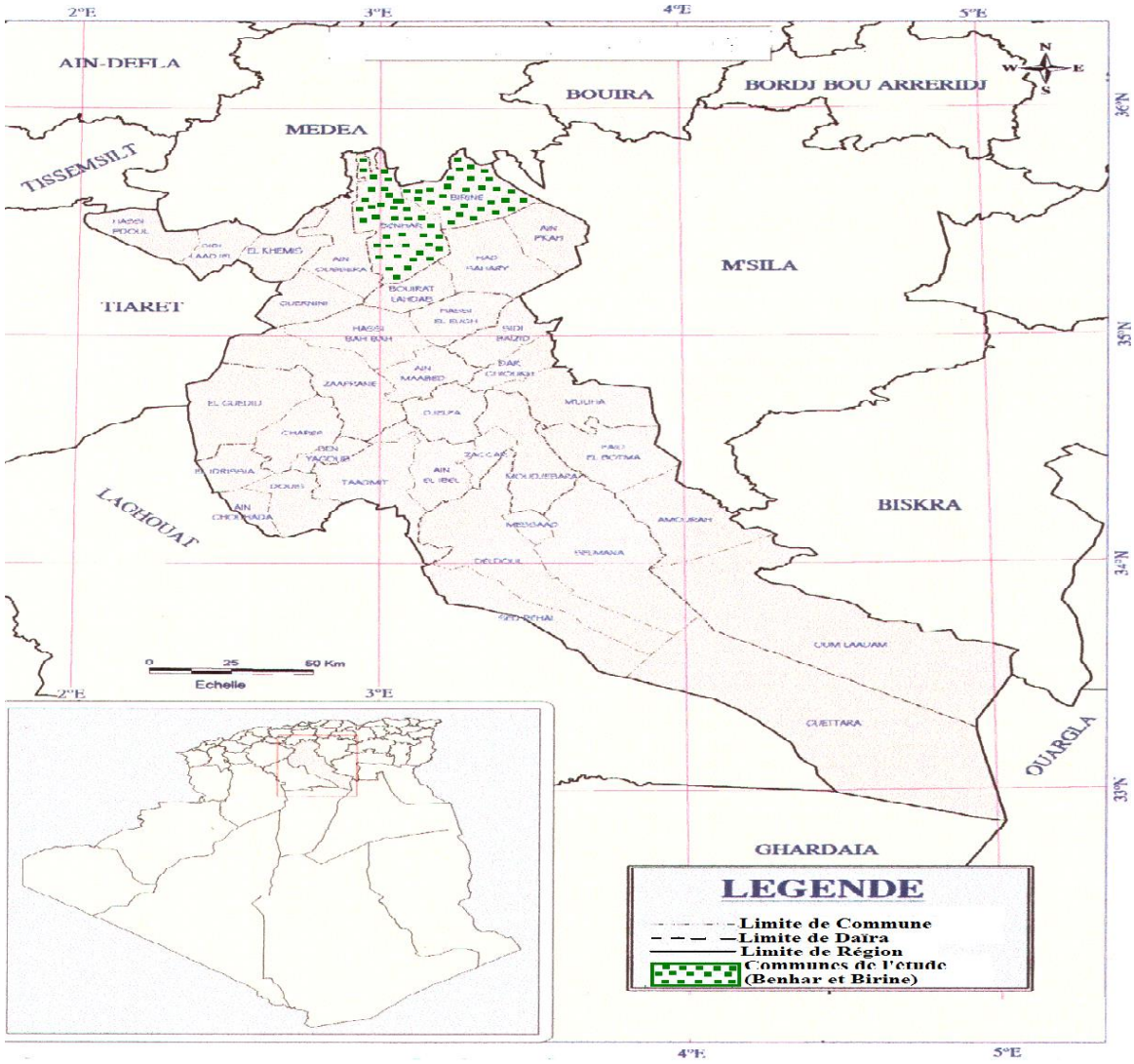

Figure 1. Djelfa region and study communes (Benhar and Birine)
Source: map adapted from that of Wijaya-Djelfa (2015)

Study methods

The investigation

For better representativeness of the planters, the sampling concerned the two communes of Birine and Benhar on the basis of the list of beneficiaries of DSA-Djelfa's internal support measures (2015). In the first, it affected altogether 150 individuals, precisely 31 individuals in Birine. In the municipality of Benhar, 119 respondents are concerned, the sample size is higher because the UAA is larger, ie 17. 300 ha against 3.775 ha of fields for the first (DSA-Djelfa, 2015).

The survey was conducted during 4 months from March to June 2015. The survey questionnaire was developed following a pre-field survey; this allowed to make the necessary corrections.

Functional Analysis Models Built with SPSS Software

The questionnaire contains a variety of questions focusing mainly on economic facts related to the indicators for evaluating cyclical phenomena in the production of the olive sector. For example, the survey yielded quantitative and qualitative responses that could be statistically analyzed to explain the influence of this fund. The advantage of SPSS software is to specify, estimate, evaluate, and present models to expose assumed relationships between many variables to compute. It allows to build more accurate models by comparison with the standard technique of multi-varied statistics.

Measures used for producers

i-The price at the farm gate

This is the price that the producer (farmer) receives for his product, at the farm level itself, without going to the market itself. The trader buys off the farm (the product of the farmer) and resells the product on a wholesale or retail market. To get the price at the farm gate, you first need to know the cost of production.

- Cost of Production = Variable Costs + Fixed Costs (1)

- Farm Exit Price = Production Cost + Profit (for producer or farmer) (2)

ii- Estimated support to producers

The other measures used are those of the OECD, in its analyzes of agricultural policies in its member countries (OECD, 2001, 2016). These are the MPS: market price support, the NSC to producers: Nominal Producer Support Coefficient and Producers' NPC: Nominal Protection Coefficient of Producers.

However, the ESP approach is widely criticized because it does not sufficiently clarify the concepts of support and subsidy to promote free trade (Berthelot, 2004). It remains the most used to measure and explain this aspect of agricultural policy very sensitive in a country and around the world.

- MPS = Off-Farm Price Difference (Producer Price at Farm Level - Market Sale Price) *** Domestic Production Volume** (here production of the region).

= (Producer Price at Farm Level - Market Sales Price) * Production Volume of Region (3)

- NSC = Value of Gross Agricultural Receipts (including PSE) / Gross Agricultural Receipts valued at border prices (excluding PSE) **(4)**

- NPC = Exceeding Border Prices / Internal Market Price *% (5)

Results

Descriptive results

All planters, economic factors in olive growing, which have received support from the FNDA, live in rural areas. Benhar and Birine are indeed rural communes. A large majority of the producers surveyed live in Benhar (79.3%), while the producers in Birine are 31 (20.7%) with a standard deviation of 0.406.

There is a significant difference in areas and production between the two municipalities. For example, the areas planted in Benhar range from 2 to 70 ha, for productions of 160 to 2240 q. On the other hand, they vary between 1 to 20 ha and provide productions of 25 to 520 q in the commune of Birine.

Empirical results

Table 1 below presents the variables (MPS, NSC, NPC) calculated for each commune (Benhar and Birine) and their synthesis. He points out that all the calculated values of the Benhar commune are higher than those of the Birine commune, because there is a significant difference in area and production between the two communes. For example, the areas planted in Benhar range from 2 to 70 ha, for productions of 160 to 2240 q. On the other hand, they vary between 1 to 20 ha and provide productions of 25 to 520 q in the commune of Birine.

Table 1. Variables Values by Common and Global

Calculated values			
	MPS (DA) *	NSC (%)	NPC (%)
Number	150	150	150
Benhar	90467652000	42.857	-223.20
Birine	4970240000	10.714	-46.80
Total	95437892000	53.571	-270
Characteristics			
Minimum	1250000	0,357	-1.80
Maximum	10035200000	0.357	-1.80
Sum	95539452000	53.571	-270.00
Average	636929680	0.357	-1.80
Standard deviation	1427865539	0.000	0.000
frequencies			
Missing	0	0	0
Average	636929680	0.357	-1.80
Median	125000000	0.357	-1.80
Mode	45000000a	0.357	-1.80
Sum	95539452000	53.571	-270.00

* 100 DA, Algerian dinar = 1.16 Euro Source: Results of the investigation, 2015

The standard deviations between the NSC and NPC variables are zero, however they are high for the MPS variables, and for this the FNDA MPS is unevenly advantageous.

The correlation between the amount and MPS is positive but not significant (r = 0.515). However, it is very significant between the useful agricultural area and the MPS (Table 2).

Table 2. Linear relatonship between calculated variables and parameters

Calculated variables Economic factors	MPS (DA)
The age	0.015
Agricultural area	0.857
Production	0.657
Amount	0.315

Source: Results of the investigation, 2015

Discussion

Calculated variables (MPS, NSC and NPC) in this analysis do explain the economic parameters that favor the state of support to agricultural producers (OECD, 2001, 2016). They inevitably measure and explain this aspect of the very sensitive agricultural policy in the country, in particular the region, despite criticism (Berthelot, 2004).

Beginning with the effect of the farmer's age in the study area; the average age of olive growers was 49.75 years benefiting from the FNDA. This fruit tree activity favors the renewal of agricultural assets, compared to the agricultural sector in general, where the age of the majority of producers is greater than 70 years (Belkhiri et al., 2015, Wilaya-Djelfa, 2015). Age, in relation to correlation coefficients, was not, however, a determinant of agricultural support.

This is also the case for the amounts released by planters for which the linear relations were between 0.015 and 0.315. Indeed, the main factor taken into account was the agricultural area which involved a large production. The correlation coefficient between area and calculated variables was 0.85 to 0.86, with MPS. Given the area, the municipality of Benhar alone produced 94.79% of MPS and obtained 42, 857% of the NSC.

The combined SPM of the 2 communes, Benhar and Birine, was 9535945200 DA (100 DA, Algerian Dinar = 1.16 Euro). The standard deviation of MPS was 1427865538 DA compared to the minimum and maximum value. The MPS, (96324438457 DA), were strongly correlated with the area and the production which implies that there is a strong impact of this factor on the distribution of the support, as it has been pointed out previously.

The same phenomenon is observed in most member countries of the European Union (OECD, 2016). Moreddu (2011) also notes that in these countries 25% of the largest farms account for between 60% and 80% of gross agricultural production. This proportion is higher in Estonia and lower in

Denmark and Italy and earns between 50% and 75% of the total support for the whole farm set, including MPS. On the other hand, the 25% of the smallest farms account for only 2% of gross agricultural production in Estonia, Ireland; their share can rise as high as 13% in Denmark and Italy. They receive about 4% to 13% of total support in most countries.

The above results show disparities in agricultural support between countries, but this can also mask the disparity between regions of the same country. The study carried out in the two communes of Djelfa showed that the initial endowment of land resources, particularly arable land, could be the source of disparity in the transfer of funds to farmers.

In the steppe environment, the present analysis highlights an important fact which is as follows: The sole area payments can not encourage the intensification of olive growing or the increase of agricultural productivity. Since access to innovation or to the variables at the base of yield increase per unit of resource remain expensive and do not encourage planters. As a result, the competitiveness of the sector requires increasingly high transfers of funds; this can be a budget constraint for the country, so a limit of this nature of agricultural support.

As a general observation, the implementation of this plan has allowed olive growing to spread more and more over useful agricultural areas to the detriment of productivity. More precisely, this agricultural policy measure is not intended primarily to remove production constraints (production technology and the price to be paid for olive tree inputs) and demand, ie the maximum price that the olive grower can load to sell a quantity of his production (Mankiew and Taylor, 2011; Atchemdi and Ouali, 2016). The primary impact sought on the basis of the FNDA is to achieve production objectives by growing crops in space, creating jobs and value outside traditional non-agricultural sources.

Conclusion

From 2008, the implementation of the FNDA by the State, is essentially a use of resources to develop agriculture, especially arboriculture and create wealth and employment. As in other countries, economic resources, especially area and production, determine the evolution of the state of support to agricultural producers to the detriment of productivity and competitiveness of the product.

The measurement variables (MPS, NSC and NPC) from the study on olive growing in Benhar and Birine communes reinforce the idea that this crop is growing under conditions that are still insufficient. It has nevertheless become the second agricultural activity in the wilaya of Djelfa, after the meat sector. However, subsidies to local growers (Djelfa) remain very low in volume and relative to agricultural gross domestic product compared to what is done in OECD countries.

In the region, olive growing is now a new and growing activity. The evolution of the state of support to producers in relation to their production and income seems necessary in order to arrive at an efficiency of the support measures.

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