

Evolution of agricultural income in Puglia between the Mac Sharry Reform and the Mid-term review¹

GIUSEPPE DE BLASI, ANNALISA DE BONI, ROCCO GIGANTE, Rocco ROMA

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1. Introduction

The need for a reform of the CAP began to arise at the end of the seventies and the beginning of the eighties. The Gundelach report, 1980, and the Thorn report, 1981, can be considered as the documents that started the revision process culminating in the Mac Sharry reform (1992). This was an important turning point for community policy strategies. In fact, for the first time, the support model based on the price system is altered, introducing elements of "separation" from production volumes and market orientation in two of the most relevant COMs: arable crops and beef. There was also the first real attempt to build into the CAP environmental protection and rural development measures.

This reform was really a response to international pressures deriving from the GATT talks rather than a solution to problems of containing overproduction, to correcting territorial imbalances and to reducing costs to the community budget.

The reform, in fact, only timidly started on the road to separation of price maintenance from quantity produced, since it neither managed to correct the imbalances on a distribution level nor did it manage to con-

Abstract

Aim of this work has been the evaluation of the effects of common agricultural policies on primary sector income in Italy, in the Mezzogiorno and above all in Puglia. In order to see the effects of Mac Sharry reform, Agenda 2000 and the Mid-term review, we considered different periods from 1993 to 2004. The aggregate income trend was analysed considering variations in agricultural added value in money and real terms. Variations in real income were broken down into three components: productive, monetary and subsidies. Results showed that on the whole, from 1996 agricultural income in Puglia declined more than in Italy and in the Mezzogiorno and, whereas in Italy the main cause of falling income had a monetary origin, above all inflation, in Apulia this negative effect was mostly due to the reduction of subsidies. Changes in subsidy systems caused great variations in crop distribution: in Puglia a concentration of intensive farming has been established in the irrigated areas, while extensive crops converged on marginal areas with scarce water supplies.

Key words: PAC reform, farm income, Puglia region

Résumé

Le but de ce travail est l'évaluation des effets de la politique agricole commune sur le revenu du secteur primaire en Italie, dans le Midi et surtout dans la région des Pouilles. Afin d'évaluer les effets de la réforme Mac Sherry, de l'Agenda 2000 et de la révision à moyen terme, on a considéré la période entre 1993 et 2004. La tendance des revenus a été analysée à la lumière des variations de la valeur ajoutée agricole en argent et en termes réels. Les variations du revenu réel ont été divisées en trois composantes: productive, monétaire et des subventions. Les résultats ont montré qu'à partir de 1996 le revenu agricole s'est réduit dans les Pouilles plus qu'en Italie et que dans le Midi. En outre si en Italie la cause de la réduction était d'origine monétaire, voire l'inflation, dans les Pouilles cet effet négatif était lié à la réduction des subventions. Les changements du système des subventions a causé de grandes variations dans la distribution productive: dans les Pouilles, l'agriculture intensive s'est concentrée dans les zones irriguées alors que les cultures extensives dans les régions marginales avec des ressources en eau limitées.

Mots clé: réforme PAC, revenu agricole, région des Pouilles

tain costs; on the contrary, the mechanism of compensation to farmers not only safeguarded the more productive areas, but even institutionalised their position of advantage (M. De Benedictis and F. De Filippis, 1999) and with the separation and the introduction of direct payments the cost to the budget increased considerably. The European Council of Berlin (March 1999) made a further development and extension of the 1992 Reform on the basis of the "Agenda 2000" document presented by the Commission in July '97. In "Agenda 2000" the Commission outlines an organic framework for consideration of the objectives and instruments for the future development of Union policies,

in terms of the limits imposed by the international and internal scenario, above all in view of the expansion to the east. The new objectives in Agenda 2000 are the need to make European agriculture more competitive and environmentally compatible and a move from the concept of safe income in terms of quantity available to one of guaranteed food quality. On the basis of these objectives, Agenda 2000 proposes to:

Develop and extend the separation criteria already adopted in the Mac Sharry Reform;

Recognise the multifunctional role of agriculture expected by society both on a productive level and in terms of protection of the environment and development of the ter-

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ritory and the rural communities; greater equilibrium between market policies and structural policies and a greater integration of environmental measures with structural ones within the common agricultural policy.

The agricultural policy choices made in the final decisions of 1999 were, however, very modest compared to the Commission's indications because the instruments with higher innovative potential were not activated, were weakened or postponed. Already, when ratifying the reform of Agenda 2000 the European Council of Berlin of March 1999 prescribed the revision of some measures by 2002/2003. This further revision, defined the Mid-term review, was started in July 2002 and finished with the decisions of the Council of Agriculture of June 26th 2003. The MTR, therefore, takes on the characteristics of a real reform of the CAP, and its essential elements can be summarised thus:

Introduction of a single payment to farms not based on production.

Subsidies tied to respect of environmental standards, food safety for plants and animals, obligation to keep land in good agricultural and environmental condition.

Introduction of a modulation mechanism to finance new policies of rural development.

Increased funding for rural development plans.

This work proposes to evaluate the effects that the Mac Sharry reform, Agenda 2000 and the first phase of the Mid-term review may have had on agriculture in Italy, in the Mezzogiorno¹ and above all in Puglia. These analyses were carried out examining in the various periods income trends in the primary sector. References to the primary sector are necessary because official national figures do not distinguish between agriculture, forestry and fishing. However, the limited influence of the latter two sectors allows us to make an approximate evaluation of the agricultural sector.

In the analysis we tried to show the role of the reforms among the many factors that have influenced the evolution of real agricultural income. The comparison between the situation in Puglia, in the Mezzogiorno and in Italy has shown the specificity of the effects of the reforms in the region.

2. Materials and methods

Taking an approach already used in a previous study (Carbone and Sorrentino 1999), the aggregate income trend was analysed considering variations in agricultural added value in money and real terms. In particular, variations in real income were broken down into three components: productive, monetary and subsidies. We then proceeded to examine partial productivity and changes in the product mix. In order to see the effects of the CAP in the changes of the dimensions under study, and in particular of the Mac Sharry reform, Agenda 2000 and the Mid-term review, we con-

sidered the period of time from 1993 to 2004, distinguishing four sub-periods corresponding to the different evolutionary phases of community policy and subsidies. The first period, from 1993 to 1995 covers the initial phase of the Mac Sharry reform; from 1996 to 1998 we see the effects of the Mac Sharry reform and the announced introduction of the revisions in Agenda 2000; the third period, from 1999 to 2001 coincides with the actuation of Agenda 2000; finally, from 2001 to 2004 we see the effects of the previous reform and the first results of the Mid-term review.

In order to stabilise the effects of accidental events and those not related to our analyses and to exclude them from our analyses, we decided to give values as three year averages centred on the years 1994, 1997, 2000, 2003. From these figures we analysed the variations in the three year periods. These variations are expressed in terms of logarithmic percentages.

To calculate income we referred to the national accounting equation:

$$Va = Plv - Ci + S \quad (1)$$

Va: agricultural added value; Plv: Gross saleable agricultural product; Ci: agricultural intermediate consumption; S: agricultural subsidies

Equation (1) was broken down into its components

$$d \ln Va = \alpha d \ln Plv - \beta d \ln Ci + \gamma d \ln S$$

Where α, β, γ : weighting coefficient, determined respectively by the ratio $\alpha = Plv/Va$, $\beta = Ci/Va$, $\gamma = S/Va$; variation of the natural logarithm "p" and "q": deflator and value at constant prices; Pil: Gross Domestic Product.

The weighting coefficients are important when changing the values of the components and have a particular significance in that they indicate the structure of Va. A higher value of β will show a high level of technical equipment, and therefore a more intensive form of agriculture, while a high value for the γ coefficient shows activity where there is a regime of compensatory payments.

Through an algebraic calculation of equation (2) we reach the following expression:

$$d \ln \left(\frac{Va}{Pil_p} \right) = \alpha d \ln Plv_q + \alpha d \ln \frac{Plv_p}{Pil_p} - \beta d \ln Ci_q + \beta d \ln \frac{Ci_p}{Pil_p} + \gamma d \ln \frac{S}{Pil_p} \quad (3)$$

This can be broken up into:

$$\text{Monetary Component: } \alpha d \ln \left(\frac{Plv_p}{Pil_p} \right) - \beta d \ln \left(\frac{Ci_p}{Pil_p} \right)$$

represents both the effects of general inflationary phenomena on variations of the purchasing power of agricultural income (expressed as $-(\alpha - \beta)d \ln Pil_p$ (weighted variation of

² The regions included in the definition of the Mezzogiorno are: Basilicata, Calabria, Campania, Molise, Puglia.

the price index), and the relative agricultural input – output price variations which can be expressed as cost-price squeeze, ($\alpha d \ln Plv_p - \beta d \ln Ci_p$).

Subsidies Component: $\gamma d \ln \left(\frac{S}{Pil_p} \right)$ allows us to see the role

of direct aid, expressed in real terms, in modifying the purchasing power of agricultural income. Also here, the weighting coefficient γ measures the entity of subsidies with respect to the added value, and is, therefore, strictly connected to the structural aspects of the crop – mix in the various territories.

From the analysis of the indices generated we can calculate:

$$\text{Real agricultural income given by } \frac{Va}{Pil_p}$$

The level of agricultural prices calculable using Plv_p

The level of intermediate consumer prices (Ci) calculated using Ci_p

The general level of prices given by Pil_p

$$\text{The real value of Subsidies given by } \frac{S}{Pil_p}$$

The cost-price squeeze can be calculated as $Plv_p - Ci_p$

Productivity Component: $\alpha d \ln Plv_q - \beta d \ln Ci_q$ allows us to attribute part of the variation in agricultural revenue to variations in the productivity of average consumption, being strictly related to logarithmic variations in the ratio $\frac{Plv_q}{Ci_q}$.

Considering the different weights of the Plv and of the Ci in the determination of Va , such that the ratio is corrected by the weighting coefficients α e β which, as we have already seen, are closely connected to the structure of agricultural income. Finally, we must consider that the component is a partial measure of productivity since it excludes all the other production factors considering only intermediate consumption.

Starting from the productivity index of intermediate consumption $\left(\frac{Plv_q}{Ci_q} \right)$ we carried out a further analysis of variations in the Productivity Component.

This relationship was broken down into two terms:

$\left(\frac{Plv_q}{SAU} \right)$ Unit productivity of the land.

$\left(\frac{SAU}{Ci_q} \right)$ Intensiveness of intermediate consumption or factor intensity.

The dynamic analysis carried out through percentage logarithmic variations of the indices allowed us to divide the increase in the productivity component, attributing a quota

to the substitution of technical means with the land factor and an increase in the total land productivity.

$$\frac{Plv_q}{Ci_q} = \frac{Plv_q * SAU}{SAU * Ci_q} = d \ln \frac{Plv_q}{Ci_q} = d \ln \frac{Plv_q}{SAU} * d \ln \frac{SAU}{Ci_q} \quad (4)$$

Where: $d \ln \frac{Plv_q}{SAU}$: variations in land Productivity; $d \ln \frac{SAU}{Ci_q}$: intensity of use of intermediate consumption

Land productivity is due to the combined effects of increased yields, given by technical progress and by variations in the product mix in favour of higher productivity crops.

A further analysis was carried out in order to attribute the increase in productivity to two causes:

Increased yields in individual sectors or groups

Variation in the production mix in favour of crops and/or sectors with a higher Plv

To this end, total Plv was split up creating *Divisia* indices and expressed as a sum of the two factors:

$$\frac{Plv_q}{SAU} = Plv_T = \sum_i Plv_i \text{ consequently } \frac{Plv_i}{Plv_T} = ai$$

Where: Plv_T = gross total national product (T) of agriculture; Plv_i := gross national product of the individual sector (i), ai := weight of the sector on.

Land productivity was then expressed as: $Plv_T = \sum_i ai * Plv_i$ (5)

On the basis of equation (5) the contribution of each sector to was calculated in terms of unit yield.

Unit Yield is given by $\frac{Plv}{SAU} = plv$, consequently:

$$Plv_T = (plv_T * SAU_T) \quad (6) \quad \text{and} \quad Plv_i = (plv_i * SAU_i) \quad (7)$$

From the association of expressions (6) and (7), taking the sum of the weight of all the sectors as equal to 1, we obtain:

$$d \ln plv_T = \sum_i ai * d \ln plv_i + \sum_i ai * d \ln \left(\frac{SAU_i}{SAU_T} \right) \quad (8)$$

in which we can see:

a yield effect: $\sum_i ai * d \ln plv_i$ that expresses the contribution of the yield variations “ i ” of the sectors to unit productivity.

And a

Structure effect: $\sum_i ai * d \ln \left(\frac{SAU_i}{SAU_T} \right)$ that indicates the variations in productive mix with respect to total SAU (*Utilised Agricultural Surface*).

Formula (8) expresses the variation of the total agricultural gross national product given by the sum of the total yield effects of each sector and the total structure effect, the

performance of the product mix of each individual sector.

For the base matrix we referred to data from ISTAT, INEA and EUROSTAT relative to Gross saleable production, Added Value, Intermediate consumption and Subsidies. For the latter we considered only the part issued by AGEA, as this is given directly to farmers to maintain and encourage sector productivity.

3. Evolution of agricultural income

Table 1 shows the trend of gross saleable product (*Plv*), of added value (*Va*) and of intermediate consumption (*Ci*), at constant 1995 prices, referred to the primary sector.

given a variation in *Plv* of 1.6%. In the variation between the second and third periods we can see how the increase in *Plv*, which is greater than in the '93 – '95 period, and the smaller decrease of *Ci*, allow *Va* to have the same variation as in the previous period. In the last period we can see an inversion of the trend with a great reduction in production: - 3% and an increase in *Ci* of 1%, which caused a collapse of *Va* of - 5.3%. This effect can be better seen in the trends of the Mezzogiorno, which had virtually zero growth in the first two three-year periods (0.3%), but a great contraction in *Ci* (- 5%). This situation allowed *Va* to grow by + 2.3%. In the following period there was an increase in *Va* of 8%, stimulated by the reduction in *Ci* and by an increase in production of + 5%. The reversal of the trend found in all Italy in the last variation can also be seen in the Mezzogiorno, but with a minimal effect on added value which reduced its growth by three percentage points compared to the previous period.

The analysis of added *Va* in Puglia showed a reduction of 14% between the last two three-year periods and a total variation between '94 and 2003 of - 10%. This trend can be seen for Italy in the period 2000 – 2003, but with smaller variations that do not

Table 1: Variations *Plv*, *Ci* and *Va* at '95 prices for Italy, Mezzogiorno, Puglia

ITALY							
	Absolute Values (000 Euro)				Logarithmic Percentage Variations		
	1994	1997	2000	2003	94 - 97	97 - 00	00 - 03
<i>Plv '95 Prices</i>	40.559.095,92	41.224.634,31	42.345.550,96	41.059.364,95	1,63	2,68	-3,08
<i>Ci '95 Prices</i>	14.130.960,04	13.640.704,21	13.466.632,75	13.620.436,55	-3,53	-1,28	1,14
<i>Va i' 95 Prices</i>	26.428.135,88	27.583.930,10	28.945.199,35	27.438.928,40	4,28	4,82	-5,34
<i>Current Va</i>					13,14	1,67	1,77
<i>Real Agricultural Income (Va/Pilp)</i>					1,15	-4,77	-6,50
MEZZOGIORNO							
	Absolute Values (000 Euro)				Logarithmic Percentage Variations		
	1994	1997	2000	2003	94 - 97	97 - 00	00 - 03
<i>Plv '95 Prices</i>	9.835.609,36	9.864.719,97	10.369.697,05	10.089.615,80	0,30	4,99	-2,74
<i>Ci '95 Prices</i>	2.779.159,93	2.646.346,50	2.549.435,60	2.694.480,88	-4,90	-3,73	5,53
<i>Va '95 prices</i>	7.056.449,43	7.218.373,47	7.820.261,44	8.269.320,51	2,27	8,01	5,58
<i>Current Va</i>					14,62	2,71	3,03
<i>Real Agricultural Income (Va/Pilp)</i>					2,64	-3,73	-5,24
PUGLIA							
	Absolute Values (000 Euro)				Logarithmic Percentage Variations		
	1994	1997	2000	2003	94 - 97	97 - 00	00 - 03
<i>Plv '95 Prices</i>	3.666.847,94	3.606.497,54	3.702.754,97	3.371.716,98	-1,66	2,63	-9,37
<i>Ci '95 Prices</i>	882.498,83	837.755,58	809.134,57	858.336,84	-5,20	-3,48	5,90
<i>Va i' 95 Prices</i>	2.784.349,12	2.768.741,96	2.893.620,39	2.513.380,14	-0,56	4,41	-14,09
<i>Current Va</i>					13,21	-5,91	-5,22
<i>Real Agricultural Income (Va/Pilp)</i>					1,23	-12,35	-13,49

For the entire period under examination, there was an increase in *Va* in Italy at '95 prices, of 3.75%, but the trend became negative in the last three-year period when *Va* decreased by -5.3%.

Overall increases in added value were found, however, in the Mezzogiorno: growth is particularly evident in the two central three-year periods (8% and 5.6%), with a more than positive overall variation in the period '94-'03 of + 15.9%. As can be seen, the growth in added value is linked to various factors. In Italy the positive variation in *Va* in the first two three-year periods, which can be identified as the years following the Mac Sharry reform, the push given by the reduction in intermediate consumption (-3.5%) is evident

cause an overall positive change. Positive variations in added value, however, are always found for the Mezzogiorno.

Puglia fully reflects the trend for Italy; from the analyses of the first variations we can see how the reduction in *Ci* does not compensate the decreasing trends in production, so much so that *Va* decreased by 0.56%. In the second period, the transition between the Mac Sharry reform and Agenda 2000, we can see how an increase in *Va* corresponds to an increase in production, even though there is a smaller reduction in *Ci*. In Puglia, as in Italy, the third period, that of the Mid-term review, confirms the reversed trend already seen nationally, with an even clearer reduction in income.

We can see, in fact, a decrease in Plv of 9.4% and an increase in Ci of 6% causing a reduction in added value of - 14%.

After analysing the Plv , Ci and Va trends we need to understand what these variations have meant for real agricultural income expressed by the ratio Va/Pil_p . (Tab. 1)

From an analysis its clear that the variation in Va in the period following the Mac Sharry reform ('94 - '97) in the three areas under examination is very positive, corresponding, however, to a much lower increase in agricultural income expressed in real terms, above all in Italy and in Puglia. From the analysis of the following three-year periods we can see how Va , in Italy and in the Mezzogiorno, slowed in growth without ever contracting. In Puglia, however, it declined sharply in the last two three-year periods.

While Va remained positive in Italy and in the Mezzogiorno, this did not stop a contraction in real terms due to inflation; in Puglia in particular this has accentuated the decline in real agricultural income.

It is clear that Italian agricultural income, in the Mezzogiorno and in Puglia, has been greatly influenced by price trends, and in particular in the last nine years, by their consistent increase which has had strongly negative effects on real agricultural income.

4. Analysis of the components

Analysing the evolution of agricultural income we can see from tables 2a, 2b and 2c how in all the geographical areas the price of agricultural products have grown disproportionately to inflation, and how, particularly in the middle two three-year periods, they have fallen at a time of a simple decrease in the rate of inflation. These trends have contributed to the general decrease in agricultural income, which has, however, been partly offset by a slight increase in intermediate consumption.

In the Mezzogiorno the result of these trends has been less negative than has been observed on a national level, at least in the period '94 - '97. After, despite inflation and intermediate consumption prices slowing down, there was a contraction of the prices of agricultural produce (-2.51 between 1997 and 2000). This negative trend stopped between 2000 and 2003 when agricultural prices seemed to follow inflation. Puglia followed the tendency of the other southern regions, but in the middle period ('97 - '00) agricultural prices fell by more than in the whole Mezzogiorno (-7%) at a time when inflation rose by +6.4%.

Table 2a: Logarithmic variations in current Plv , Ci , Va , Agricultural income, Prices and components of Italy income.

ITALY							
	Percentage Logarithmic Variations						
	Simple	Weighted	Simple	Weighted	Simple	Weighted	
	94 - 97		97 - 00		00 - 03		
						94 - 03	
Plv 95 prices	1,63	2,15	2,68	3,47	-3,08	-4,00	1,23
Ci 95 prices	-3,53	-1,82	-1,28	-0,63	1,14	0,58	-3,68
Va 95 prices	4,28	0,82	4,82	0,94	-5,34	-1,12	3,75
Real Agricultural Income (Va/Pil_p)	1,15		-4,77		-6,50		
Real Agricultural Prices ($Plvp/Pil_p$)	-3,72	-4,92	-7,53	-9,76	-1,17	-1,52	
Real Input Prices (Cip/Pil_p)	-4,92	-2,53	-3,79	-1,86	-1,08	-0,55	
Real Subsidies (S/Pil_p)	-5,36	-1,03	4,64	0,91	-2,18	-0,46	
Deflator Plv ($Plvp$) (Agricultural prices)	8,26		-1,09		7,10		
Deflator Ci (Cip) (Ci prices)	7,06		2,65		7,19		
Deflator GDP (Pil_p) (Inflation)	11,99		6,44		8,27		
PRODUCTIVE component	3,97		4,10		-4,58		
MONETARY component	-2,39		-7,90		-0,97		
• Variation Cost-Price squeeze Input - Output	7,30		-4,06		5,57		
• Inflation Effect	-9,68		-5,18		-6,54		
SUBSIDY Component	-1,03		0,91		-0,46		

Table 2b: Logarithmic variations in current Plv, Ci, Va, Agricultural income, Prices and components of Mezzogiorno income.

MEZZOGIORNO							
	Percentage Logarithmic Variations						
	Simple	Weighted	Simple	Weighted	Simple	Weighted	Simple
	94 - 97		97 - 00		00 - 03		94 - 03
Plv 95 prices	0,30	0,35	4,99	5,78	-2,74	-3,19	2,55
Ci 95 prices	-4,90	-1,86	-3,73	-1,35	5,53	2,10	-3,09
Va 95 prices	2,27	0,43	8,01	1,64	5,58	1,19	15,86
Real Agricultural Income (Va/Pil_p)	2,64		-3,73		-5,24		
Real Agricultural Prices ($Plvp/Pil_p$)	0,06	0,07	-8,95	-10,35	0,37	0,44	
Real Input Prices (Cip/Pil_p)	-1,00	-0,38	-1,28	-0,46	-0,46	-0,18	
Real Subsidies (S/Pil_p)	12,32	2,35	1,20	0,25	-1,97	-0,42	
Deflator Plv ($Plvp$) (Agricultural prices)	12,05		-2,51		8,65		
Deflator Ci (Cip) (Ci prices)	10,99		5,16		7,81		
Deflator GDP (Pil_p) (Inflation)	11,99		6,44		8,27		
PRODUCTIVE component	2,21		7,12		-5,29		
MONETARY component	0,45		-9,89		0,61		
• Variation Cost-Price squeeze Input - Output	10,15		-8,06		7,12		
• Inflation Effect	-9,70		-5,12		-6,51		
SUBSIDY Component	2,35		0,25		-0,42		

Table 2c: Logarithmic variations in current Plv, Ci, Va, Agricultural income, Prices and components of Puglia income.

PUGLIA							
	Percentage Logarithmic Variations						
	Simple	Weighted	Simple	Weighted	Simple	Weighted	Simple
	94 - 97		97 - 00		00 - 03		94 - 03
Plv 95 prices	-1,66	-1,87	2,63	2,91	-9,37	-10,54	-8,39
Ci 95 prices	-5,20	-1,62	-3,48	-1,09	5,90	2,07	-2,78
Va 95 prices	-0,56	-0,10	4,41	0,92	-14,09	-3,19	-10,24
Real Agricultural Income (Va/Pil_p)	1,23		-12,35		-13,49		
Real Agricultural Prices ($Plvp/Pil_p$)	1,57	1,77	-13,37	-14,76	0,34	0,38	
Real Input Prices (Cip/Pil_p)	0,79	0,25	-3,09	-0,97	-2,10	-0,74	
Real Subsidies (S/Pil_p)	13,26	2,47	-0,87	-0,18	-8,36	-1,89	
Deflator Plv ($Plvp$) (Agricultural prices)	13,56		-6,93		8,61		
Deflator Ci (Cip) (Ci prices)	12,77		3,35		6,17		
Deflator GDP (Pil_p) (Inflation)	11,99		6,44		8,27		
PRODUCTIVE component	-0,24		3,99		-12,61		
MONETARY component	1,53		-13,79		1,12		
• Variation Cost-Price squeeze Input - Output	11,28		-10,99		7,52		
• Inflation Effect	-9,75		-5,10		-6,40		
SUBSIDY Component	2,47		-0,18		-1,89		

4.1 The Productive Component

The productive component has had an important role in agricultural income change. The variation of the productive component from 1994 to 2000 (tabs. 2a, 2b and 2c) was positive in all divisions, while production in real terms fell considerably from 2000 to 2003.

These trends are due to the variation in the *Plv* of the areas under examination. In particular in Puglia, between 1997 and 2000, we see a growing increase in production contrasted by a growing contraction in intermediate consumption. These trends correspond to the full application of the Mac Sharry reform, which determined the move to better performing productive mixes and favoured a slight containment of intermediate consumption causing a less intense use of factors through a greater attention to agro-environmental aspects (set-aside and cereals). In particular, in the first three-year period we see a fall in production of 1.7% when there was a *Ci* reduction of -5.2%; in the following three-year period the *Plv* variation was positive in line with that of Italy. This type of variation can be seen in all the areas. In the last three-year period, both in the whole Mezzogiorno and above all in Puglia there was a contraction in Gross saleable agricultural product and a growth in intermediate consumption. Total variations in '93 – '04 were positive in all the areas examined, except in Puglia. In fact, in the 12 years examined, in Italy there was growth of +1.3% for Italy and +2.5% for the Mezzogiorno, but a total fall in Puglia of -8.4%.

The total variation in intermediate consumption was negative in all the areas examined, a sign of the move to less intensive sequences and the adoption of technology with a less intensive use of machinery.

From the trend described we can see that the productive component had a positive effect on the evolution of agricultural income in Italy and in the Mezzogiorno, but extremely negative in Puglia where it caused a total reduction of 10% of added value.

Community Policies through the years have brought a gradual reduction in subsidies and this has caused a fall in production, bearing in mind, however, that the *Plv* examined also includes the subsidy quota. The Community Agricultural Policy applied in the early years of this century have had a great influence on production in Puglia, discouraging low income crops like cereals and totally separating the subsidy.

4.2. The Monetary Component

The monetary component had a limited role in agricultural income variation in the first and last three-year periods studied, but it was a determining factor for agriculture in the 1997 – 2000 period. In fact, the variations range from slightly positive values, as in the Mezzogiorno and Puglia, +0.45% and +1.5% respectively in the '94 – '97 period, to extremely negative values (-9.9% and -13.8%) for the same areas in '97 – '00. There was clearly a negative effect of this component, more evident in Puglia, with re-

spect to the average in Italy and in the Mezzogiorno as a whole.

Analysing the variations we can state that in the first period (1993 – 1997) the monetary component had negative effects on variations in real income for Italy, mainly due to an inflationary effect that was not compensated by an input – output cost-price squeeze. This "squeeze", however, was evident (+10.15 Tab.2b) in the Mezzogiorno, where it caused a total compensation of the negative effect of inflation. In Puglia there were even better results than those for the Mezzogiorno (+11.28 Tab.2c). This first trend can be explained, above all in Puglia and in the areas of the Mezzogiorno, by the effects of the Community Policy following the Mac Sharry reform, which encouraged movement to less intensive farming and a lower rise in Intermediate Consumer prices than that of the agricultural products.

In the following period (1996-2001) we see an inversion of the trend, following the considerable fall in the price of agricultural products at the same time as a great increase in intermediate consumption. This brought about a very negative effect on the monetary component, despite a falling rate of inflation. The most negative value of all the areas examined can be found in Puglia, where agricultural prices collapsed with respect to other areas, despite the fact that the increase in *Ci* prices was similar to that found in all of Italy. This type of trend cannot be directly attributed to the effects of the community agricultural policy, but more to Italy's exit from the European Monetary System. With the exit from the EMS in the early 90's the Lire was strongly devalued. This caused the prices of agricultural means of production, mainly bought from abroad, to rise, and a fall in the price of agricultural produce due to an increase in exports. Furthermore this situation gave rise to an increase in investment abroad, in countries where a stronger currency would allow the product to be more competitive.

In the last period studied, the situation got much better as agricultural produce prices started to grow again, both in Puglia and in the Mezzogiorno, at a much higher rate than the increase in intermediate consumption. Only in Italy was there a slightly negative variation due to a higher *Ci* increase with respect to other areas.

Finally, analysing the difference between the influence of production and that of intermediate consumption on the creation of agricultural added value we can see that, in all the areas examined, there was a fall, in terms of quantity, of intermediate consumption, with a greater fall in Puglia. This was due to a rise in the price of technical means giving them greater importance in the companies' balance sheets. This brought about an evolution of agriculture in Italy and above all in Puglia towards extensive production.

4.3. The subsidy component

During the period of full application of the Mac Sharry reform there was a considerable increase in direct funding for the Mezzogiorno and Puglia with respect to the trend in

Italy where subsidies tended to be reduced. The community gave a great contribution to the agricultural income of producers in the Mezzogiorno. In the period from '97 to 2000 this trend of increasing subsidies in the southern regions continued, but the rise was less steep. In Puglia the trend became negative, bringing a consequent reduction in agricultural revenue. With Agenda 2000 there was a reduction in linked funding in favour of separate subsidies tied to quality and agro-environmentally friendly practices. It is easy to see how Puglia, with an agriculture mainly based on heavily subsidised crops, such as cereals and olives, found it very difficult to adapt to the new rules with respect to other regions. In the third period there was a further constant reduction in subsidies as provided for in Agenda 2000 and the following Mid-term review. Puglia was more affected by the reduction in subsidies for agricultural income than the other areas examined, with a fall estimated at -1.9% (tab. 3c). The other areas also suffered a negative effect on income because of these reductions, but for a more precise analysis we need to look at the role of subsidies in the creation of added value. To do this we need to look at the weighting coefficient? (Graph.1)

We have seen how, despite their progressive reduction, community subsidies have become over time an important part of agricultural added value. This phenomenon is more evident in the situation of agriculture in Puglia where subsidies play a greater part in creating V_a and therefore agricultural income.

This analysis of the components of agricultural income shows how Community Policies have had a marginal role, not supporting agriculture in the periods when it needed subsidies and taking on the simple role of helping farms to survive without providing effective incentives for remunerative innovations and changes.

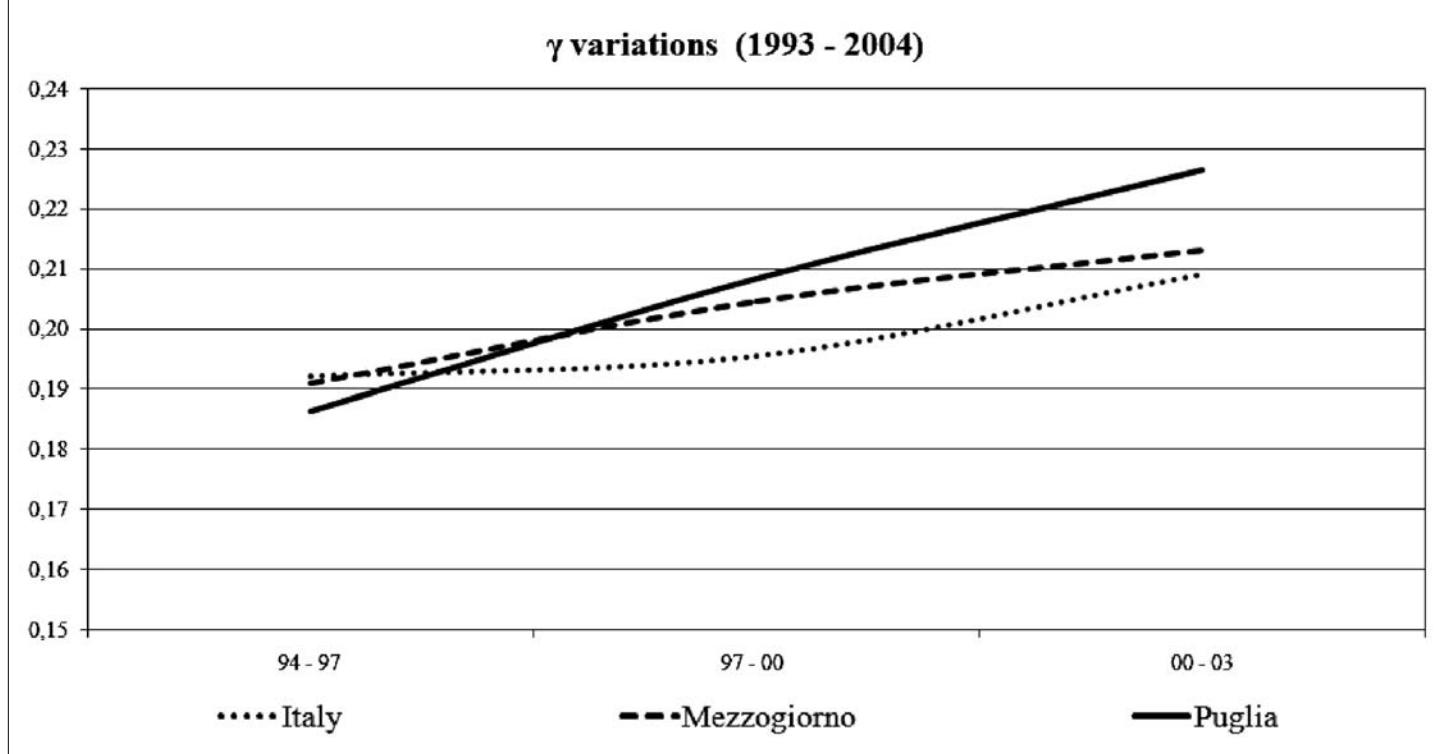
5. Evolution of agricultural income in the cereals and olive sectors in Puglia

A further analysis evaluated the effects of the policies on farmers' income in terms of variations in productivity and intermediate consumption. Below are the results of the analysis carried out on two sectors of agriculture in Puglia. The sectors of cereals and olives were evaluated on the basis of both the contribution of each to the Plv of the corresponding sector at a national level (about 10% for cereals and over 37% for olives) and the high level of subsidy that these sectors have enjoyed in the past.

5.1. The cereals

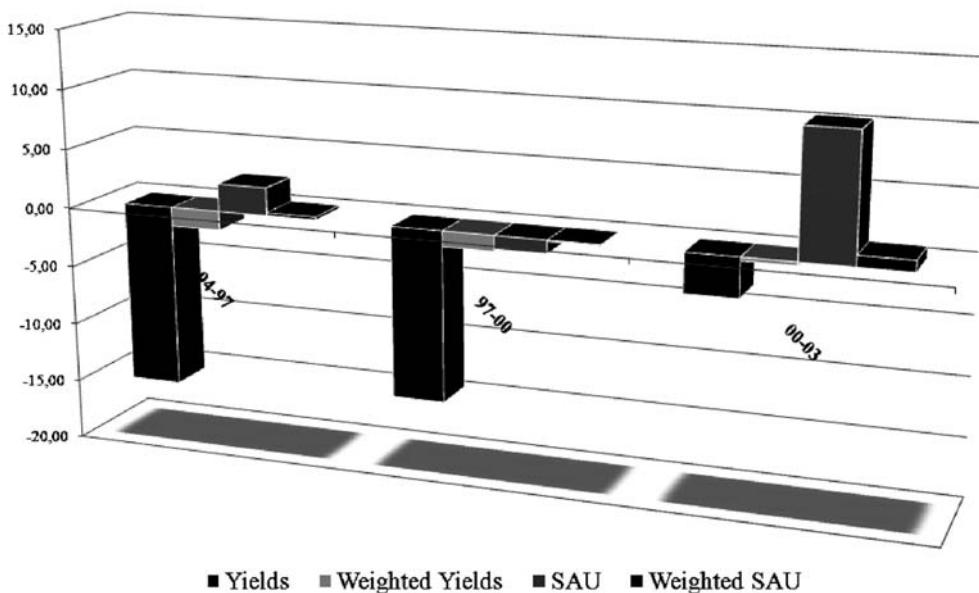
In the cereal sector we examined: durum wheat, soft wheat, maize, barley, oats and rye. These crops are considered the most representative, both because of the frequency of their cultivation within the regions and for the impact they have on total Plv in the sector (9.6% of Italian Plv).

Graph 1: Variations in weighting coefficient? in Italy, Mezzogiorno and Puglia



Graph 2: Three-year variations in yields and of SAU of cereals in PUGLIA centred on the year of reference.

CEREALS: Yields and SAU variations in PUGLIA



As can be seen in Graph 2, in Puglia there is a fall in yields in the period after the Mac Sharry reform ('94 – '97): the fall is much sharper than in the rest of Italy and in the Mezzogiorno: -15.3%, and a slower growth in surface area, +2.3%. In the transition period between the Mac Sharry reform and Agenda 2000 the fall in yields continues, but slower (-14.3%), and there is a reduction in the surface area destined for this sector (-1.1%). On the contrary, in a comparison between the last two three-year periods ('99 – '01, '02 – '04) affected by the Mid-term review, we can see a considerable increase in the surface area dedicated to cereal crops, +10.4%, unlike in other areas, but no corresponding increase in yields. These continue to be negative (-3.3%), showing a tendency for extensification.

On the whole, in the first period, the surface increase and the fall in yields in the cereals sector can be justified by the cultivation of more marginal soils as well as those traditionally cultivated, because of the chance to receive subsidies.

In the second period, the obligatory set-aside and the introduction of regionalised yields caused a reduction in the surface areas cultivated. In Puglia, which has a larger SMN and a supple-

mentary bonus for the traditional areas, this fall was much less than in the other areas examined. The introduction of regionalisation and different funding for cereals as opposed to oilseeds and proteins caused a migration of the latter to more productive areas, causing an increase in SAU and in yields.

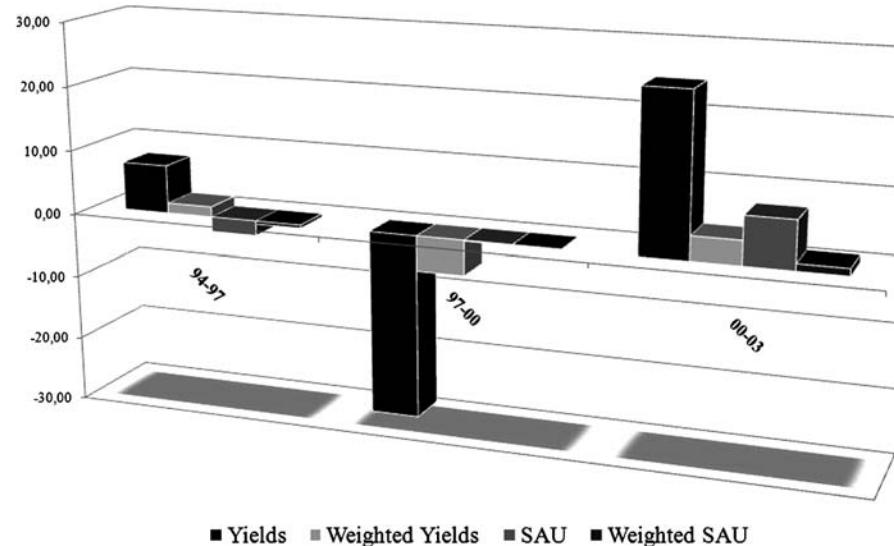
In the last period there was a general increase in the surface area dedicated to cereals, particularly in Puglia. This increase was probably caused by the conversion of the SAU dedicated to oilseeds and proteins, industrial crops and market gardening into areas for growing cereals. This conversion was due to the reduction of subsidies for these products and the introduction of aid directed at surface areas and quality bonuses. The increase in surface area caused increases in yields, probably due to the concentration of crops in the more productive areas and to abandonment and set-aside (+10% of the surface area).

5.2. Olive

In Puglia olive cultivation is even more important than in the Mezzogiorno and in the rest of Italy (Graph 3).

Graph 3: Three-year variations in yields and of SAU of olives in PUGLIA centred on the year of reference

OLIVE: Yields and SAU variations in PUGLIA



In the period following the Mac Sharry reform there were positive variations in yield, with trends similar to those seen for Italy and for the Mezzogiorno: +7.5%. The surface area destined for olive cultivation, however, unlike the trends for Italy and the Mezzogiorno, fell by -2.3%. In the transition period between the Mac Sharry "bridging reform" and Agenda 2000 there was a drastic reduction in production, causing a negative variation in yield, both in simple terms and in relation to the whole agricultural sector in Puglia: respectively -28.4% and -5.4%. The surface areas under cultivation, however, were the same as in the previous period. In the whole period we can see the effect of the application of law 2092/91, regarding the field of biology. It seems clear, from an analysis of statistics supplied by INEA, that Italy, and above all Puglia, converted rapidly from traditional to organic farming methods. Puglia is the prime producer of organic olives with 50% of the total for Italy, and in the last three-year period 30% of farms converted. This conversion from traditional to organic olive farming led to a consequent fall in yields which could partly justify the trends we have seen.

In the third period, affected by the Mid-term review, production grew again, with a positive influence on weighted yields for the entire agricultural sector (+3.7%) and a reasonable growth of simple yields: +24.6%. The increase in production also had a positive influence on surface areas which grew with a positive SAU variation of +7.3%. As we have already seen, the increase in yields is probably due to the subsidised planting of new areas for olive production, which was also encouraged by a larger bonus for small producers.

From a global analysis of the trends for yields and surface areas of olive cultivation we can see that in the first period examined there was an increase in yields because of linked subsidy, such as aid for consumption and for production. The latter were also given to small producers under the form of a higher subsidy. Puglia, being characterised by a large number of small farms, benefited from this. Surfaces under cultivation generally increased, except in Puglia, where they fell slightly. In 1998 the Oil COM was reformed through Regg. 1638-1639/98, causing the disappearance of aid for consumption and a great reduction in aid for production. This notable reduction in aid led, in the second period, to a corresponding fall in yields in all the areas examined, encouraging the extensification of growing techniques.

The years between 1998 and 2004 saw the introduction of two other Regulations (1513/01; 1019/02) which brought substantial innovations to the pre-existing rules: aid for new plantations, for the conversion of old plantations, bonuses for quality and the constitution of a Geographic Information System. These innovations led to a growth in surface areas in all the territories examined, while in Puglia, a traditional olive growing area they brought about an increase in yields. From this we can see how, in the last period, the European Community opted for a policy of improving qual-

ity rather than quantity in order to combat the competition from the entry of new producing countries into the EU.

6. Conclusions

Analysing the individual components of agricultural income we can state that in Italy the main cause of falling income has a monetary origin, above all inflation, and to a lesser extent the reduction of subsidies. We can see how, in the three-year period '97 - '00 the tightening of the input-output cost-price squeeze had an important influence on falling income. In the '00 - '03 period, however, we can see how the main cause of the contraction of real income is the fall in production.

For the Mezzogiorno we can state that agricultural income grew in the first period (+2.64%), above all thanks to the push of production, and despite a negative inflation effect of around 10% - compensated, however, by a cost-price squeeze of about the same amount. In the '97 - 2000 period there was still an increase in production, but not enough to compensate for the cost-price squeeze (-8.06%) which, together with inflation (-5.2%) caused negative growth in the monetary component. In the last period examined there was a further cost-price squeeze encouraging growth in the monetary component. In the same period production fell with the reduction in subsidies.

The indices for Puglia show similar, but more accentuated trends compared to Italy and the Mezzogiorno. On the whole, from 1996 agricultural income in Puglia declined more than in Italy and in the Mezzogiorno. In the first period we see a near stagnation in production and a level of inflation equal to that on a national level, compared to a cost-price squeeze of 11.3% and an increase in subsidies of 2.5%. In the following period there is a considerable effect of the monetary component on the reduction in agricultural income with respect to the other areas (-13.8%), greatly influenced by the cost-price squeeze (-11%). To this negative effect we must add the fact that subsidies did not grow. In the last two three-year periods we see a considerable fall in production (-12.6%), which is not compensated by a trend inversion of the monetary component of income which returns to growth, pushed above all by the fall in the cost-price squeeze.

It is clear how community policies in the last 9 years have caused a reduction in the incidence of subsidies on income.

The subsidy systems of the COMs have certainly caused great variations in crop distribution throughout the region. In particular, Community Policies applied through the various COMs have encouraged the growth of SAU laid down for cereals. In Puglia, where the main product is durum wheat, this has partly replaced the oilseeds and protein crops, industrial crops such as sugar beet and tobacco, forage and probably also areas previously used for market gardening.

Market gardening has been "concentrated" in the more suitable areas where there has been an increase in yields due to an intensification of the growing techniques (fertiliser, intense rotation, protective measures etc.).

The system of incentives through bonuses for transformation and above all for the producers, the aid for replanting in the fruit and vegetable COM has seen an expansion in the surface area and improved yields for the main stone fruit trees (Clementine, cherry, peach) since 2001.

Olive cultivation seems to have seized the opportunities offered by Community Policies, above all since 2000, with a progressive increase in yields and a reduction of the SAU. This increase can be put down to the creation of the SIG (Geographic Information System), which has allowed a detailed control of national olive cultivation. The increased yield is probably due to new, more productive plantations and to the adoption of innovative technology encouraged by the policies.

The wine sector, thanks to incentives to plant new varieties given by Community Policies and to the fruiting of new, more modern plantations, has improved its performance through an increase in the quality of the product, confirming Puglia's vocation for wine production, to the point where, unfortunately, national and international producers are moving in with greater potential for massive investment and greater power in the market.

The table grape sector, unlike the other fruits, has been more subject to price fluctuations and marketing problems, and in the last period yields fell.

On the whole, recent policies seem to have favoured the concentration of crops for which Puglia has a traditional vocation (olive, market gardening, fruit) in the irrigated areas where intensive growing techniques are used, and the productivity and further distribution of cereals, in particular durum wheat, in the marginal areas with scarce water supplies. The wine sector also seems to have taken up the opportunities offered by the new CAP.

Despite all this, in terms of agricultural income, farming in Puglia has had decidedly worse results than in the other areas examined. This can at least be partly explained by "end of the line" problems in agricultural production. The inability of the farmers to approach either the market or the processing industry because of inadequate prices and low agricultural wages. The reasons for this low bargaining power can be found in the structural aspects of farms in Puglia (size, fragmentation, high average age of the farmers, etc.) and the insufficiency and often inefficiency of the associations in the territory.

The scene described appears even more worrying with the prospect of the new Fischler reform coming into force.

The single farm bonus will be more or less independent from the choice of crops by the farmer, and from the type, quantity and quality of production, and income will be left exclusively to the ability to operate on the market.

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