Consequences for the single market of the implementation of special VAT regimes for agriculture in the European Union

José A. GÓMEZ-LIMÓN
Julio BERBEL

José A. GÓMEZ-LIMÓN*, Julio BERBEL**

Conséquences de l'application des régimes spéciaux de la TVA pour l'agriculture au sein du marché unique européen

Résumé — Les régimes de TVA (Taxe sur la valeur ajoutée) appliqués au secteur agricole varient dans les différents Etats-membres de l'Union européenne (UE). La plupart des pays ont adopté un régime spécial de TVA agricole : ils déterminent un pourcentage de compensation forfaitaire qui s'applique au volume des ventes des producteurs, et qui est supposé compenser le montant de TVA que ces derniers ont acquitté lors de l'achat de leurs intrants. Ce pourcentage forfaitaire peut conduire, selon son niveau, à taxer ou, au contraire, à subventionner de manière indirecte les producteurs agricoles nationaux. Ces systèmes spéciaux de TVA sont donc susceptibles de générer des distorsions de concurrence sur les marchés agricoles intracommunautaires. L'objectif de cet article est d'analyser ces régimes spéciaux de TVA agricole et de déterminer dans quelle mesure ils sont neutres, s'apparentent à une taxe ou correspondent à une subvention vis-à-vis des secteurs agricoles nationaux. Pour ce faire, un indicateur est proposé, et calculé, pour chaque Etat-membre de l'UE, au niveau du secteur agricole national dans son ensemble et au niveau de chaque type d'exploitation par orientation productive. Les résultats obtenus font apparaître des différences significatives quant à la pression fiscale induite par les régimes spéciaux de TVA agricole dans les différents états. Ces différences de traitement fiscal apparaissent aussi bien, au niveau national, entre secteurs agricoles des différents pays, qu'au niveau des exploitations types, entre orientations productives à l'intérieur de chaque Etat-membre, et pour chaque orientation productive entre pays membres de l'UE. Nos résultats tendent donc à montrer qu'un effort d'harmonisation des régimes spéciaux de TVA agricole au sein de l'UE reste nécessaire pour résorber les distorsions de concurrence existantes sur les marchés agricoles communautaires, dans l'optique de la réalisation complète du Marché unique européen.

Mots-clés :
TVA, politique fiscale, marché unique, marchés agricoles

Consequences for the single market of the implementation of special VAT regimes for agriculture in the European Union

Summary — The application of VAT to agriculture varies in the member countries of the European Union (EU). Most countries accept a special regime for small and medium-sized holdings in the agricultural sector in order to avoid the burden of record-keeping involved in VAT administration. The present paper analyses the VAT Special Regimes for Agriculture of EU members and proposes an indicator to compare the degree of neutrality of VAT regimes between EU Member States, from both national farm level and farm typology level points of view. Our conclusions are that there are significant differences in tax pressure between countries, with the result that in some of them agricultural producers are taxed in excess, while others are subsidized by the implementation of the agricultural VAT regime. A serious effort should be made to harmonize members' tax policies in order to allow fairer competition throughout the European Single Market.

Key-words :
VAT, fiscal policy, single market, agricultural markets

* Department of Agricultural Economics, ETSIIAA, University of Valladolid, Avda. de Madrid, 57, 34071 PALENCIA (Spain)
e-mail: limon@iaf.uva.es
** Department of Agricultural Economics, ETSIAM, University of Cordoba, P.O. Box 3048, 14080 CORDOBA (Spain)
e-mail: berbel@uco.es

TAX policy has rarely been discussed by agricultural economists. The existing literature on the subject is therefore quite scarce (Pinon, 1981; Kearney and Boyle, 1988; Guyomard and Mahé, 1991). The present paper is a contribution in this field. Its main objective is to analyse whether the special VAT (value added tax) regimes for farmers (Special Regime for Agricultural Producers or VAT-SRAP) bring about competitive distortions between the agricultural sectors of the European Union (EU) Member States.

The supported idea is the following. Special VAT regimes most often establish a flat-rate percentage that agricultural producers are allowed to add to their sale prices in order to compensate the VAT paid on purchased inputs. Hence, according to the level of this flat-rate percentage, special VAT systems may reveal neutral, result in an over-taxation or an indirect subsidy for domestic producers. In other words, special VAT regimes implemented in the various EU Member States may potentially induce competitive distortions on the EU agricultural markets.

In this paper, we propose an indicator which allows to measure the degree of neutrality of VAT-SRAP applied in the various EU Member States. This indicator may be calculated for each country, either at the whole agricultural sector level, or for various types of farm. This make then possible to compare the tax pressure resulting from VAT-SRAP: i) on agricultural sectors between EU Member States; ii) on the various types of farm within each country and iii) on each type of farm between countries. Such comparisons are directed to highlight the competitive distortions induced by special VAT regimes between EU agricultural sectors and within EU agricultural markets.

Previous research works dealing with VAT and agriculture are often limited to one or, at most, a few specific EU Member States (e.g., Coutel, 1989; García Azcarate, 1986; Iglesias *et al.*, 1989; Gómez-Limón and Berbel, 1994a and b; Juliá and Del Campo, 1994). The main contribution of this paper is to extend the analysis of VAT regimes for farmers to the overall EU member countries, and especially to make possible comparisons of the degree of neutrality of these VAT systems between countries and types of farm.

The paper is organised as follows. In the first section, principles and provisions of VAT regimes for agriculture in force in the twelve previous member countries of the EU are reviewed. The proposed indicator of the degree of neutrality of these VAT regimes, as well as the data required for computing it for each Member State at both the aggregate agricultural sector level and the « disaggregated » farm type level, are described in the second section. Empirical results are analysed in the third one before the concluding remarks.

VAT AND AGRICULTURE

VAT implementation in agriculture:
Problems and options

Neutrality is the key principle of the Value Added Tax. The normal VAT regime, through the compulsory registration of all business activities, is designed to assure this neutrality. Hence, as regards to agriculture, only with the registration of all farmers and their subjection to the general rules of VAT, could equality in trading conditions be assured, avoiding cascading and offering a fair deal to all agricultural producers.

In spite of the above assertion, one is forced to admit that, in reality, specific circumstances hinder the application of the normal VAT regime in agricultural sectors: lack of adequate accounting or management techniques for the application of this tax, widespread absence of trade documentation in commercial transactions, or the existence of a great number of individual salepersons which makes their control by the authorities extremely difficult. All these factors favour the acceptance of a special VAT regime for agriculture. Authors such as Soto (1978) and Checa (1996) distinguishe more than ten kinds of special VAT regimes. On the basis of an analysis of the main advantages and drawbacks of these possible special regimes, they conclude (with Due, 1990, and Tait, 1998) that the most suitable systems for agriculture are the both following:

The exemption of farmers via zero VAT rate to their suppliers, in cases where this particular regime is the final one for agriculture.

A flat-rate regime designed to offset the VAT paid by farmers on purchases of agricultural inputs, in cases where the normal regime is, in the medium term, compulsory for all agricultural producers.

In accordance with these conclusions, and because it was seen as a transitional system at that time, the European Community selected the second VAT regime. This system was adopted by the European norm in article 25 of the Sixth Directive (1977), and corresponds to the so-called *Special Regime for Agricultural Producers (SRAP)* which is still in force in the EU.

The SRAP in the European Law

The special VAT regime described in the Sixth Directive allows individual countries to establish a *flat-rate system* for agricultural businesses. In practice, the SRAP implies the exemption of the agricultural sector from VAT through the removal of the compulsatory registration for farmers. Then, in order to remedy to the lack of neutrality that such an

exemption does actually induce, the VAT-SRAP involves a compensation scheme for the VAT paid by farmers on their purchases of inputs. This compensation scheme relies on the fixing of a flat-rate percentage which is applied on farmers sales. Hence, most often, farmers add this flat-rate percentage to their selling prices, i.e. they sell their outputs inclusive of VAT [1].

Therefore, with the SRAP, as opposed to the general regime, farmers do not need to show evidence (invoices) that VAT has actually been paid by their input suppliers, nor to liquidate with the Treasury the VAT cashed on sales. The farmers simply cash the markup (forfait) as a « compensation » that should be roughly equal to the VAT paid on purchased inputs. On the other hand, the SRAP implies that farmers cannot claim for any compensation of the VAT paid on inputs. However, as this special regime is not compulsory, any farmer considering that he suffers from an over-taxation via the SRAP may join the normal VAT regime.

In fact, the VAT-SRAP and its compensation system is not a mandatory regulation but an option offered to EU Member States. In spite of this, all EU-12 member countries, but Denmark [2], retained this special regime for their agricultural sector. These Member States use the flat-rate compensation scheme described above, in accordance with the Sixth Directive. However, provisions in this Directive remain rather vague regarding some aspects of the VAT-SRAP, particularly its scope of application and the fixing of the flat-rate. Thus, this lack of precise provisions for both these aspects, allows wide divergences among national regulations.

In this paper we focus on the fixing of flat rates, which is both the key variable of the VAT-SRAP compensation scheme and the main potential origin of fiscal distortions within EU agricultural markets.

VAT-SRAP flat rates in EU Member States

The Sixth Directive does not specify how VAT-SRAP flat rates should be calculated. It only states that these flat rates should not result in turning the VAT-SRAP into a global protectionist regime.

Thus, each EU country has been allowed to establish its own flat-rate system within this wide range of freedom. And this is not surprising

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[1] In France however, farmers sell their outputs exclusive of VAT and perceive a refund from the Treasury.

[2] Danish farmers are characterised by a high level of management skills which has traditionnaly permitted the compulsory registration and the general rules of VAT to be applied in the domestic agricultural sector without causing serious problems.

that applied flat rates do actually differ among countries. Flat rates in force on the first of January 1993 in the 11 EU countries applying the VAT-SRAP are reported below.

At this time, some Member States applied a single flat-rate percentage. These are Belgium (6%), Germany (8.5%), Ireland (2.5%), Luxembourg (8%), Netherlands (5.93%), Portugal (0%), Spain (4%) and United-Kingdom (4%).

While the others had retained three distinct flat rates, such as 2.5% for agricultural products, 5% for animal products and 2.5% for agricultural services in Greece; 2.55% for agricultural products, 3.65% for animal products and 3.75% for animals for slaughter in France; 4% for agricultural products, 9% for cattle, milk and pigs and 8.5% for other animal products in Italy.

At this stage, two remarks are in order. Firstly, in choosing a zero compensation flat rate, Portugal clearly penalises the domestic farmers. In fact, the Portuguese agricultural sector is implicitly excluded from the national VAT system and domestic producers pay VAT on their purchased inputs as if they were final consumers. Secondly, in the case of France, above reported flat rates are those applying to sales made by individual or private firms. Flat rates relating to sales from cooperatives or other associations of producers are different [3]. Therefore, in the following empirical exercise, we consider two cases for France: the first one where all sales are assumed to be carried out by individual farmers and private firms (the normal case), and the second one where it is hypothesised that all sales are made by cooperatives and associations of producers (the associated case).

AN INDICATOR FOR MEASURING THE DEGREE OF NEUTRALITY OF VAT-SRAP

The VAT-SRAP flat rate is the percentage that is applied to the farmer's output in order to reimburse him for the VAT content of his purchases of raw materials. This flat rate should be chosen in such a way as to avoid distortions in farm production decisions. As, miscalculated, the rate of offset may result in some farm products to be indirectly subsidised or, at reverse taxed, the relative competitiveness of all farm outputs being affected.

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[3] For certain agricultural products, the French legislation provide higher compensation flat rates for sales made by cooperatives and associations of producers. Such a differenciated rate system according to the status of the salaperson has come to be used in France in order to favour the development of associanism with the agricultural production sector.

As indicated in the European Law (Sixth Directive, Art.25.3), the rate of compensation must be calculated on the basis of macroeconomic statistics, in order to avoid the agricultural sector be reimbursed more than the total amount of VAT actually paid on purchases. However even this rule does not ensure the VAT-SRAP to be neutral. In fact, even correctly determined at the the macroeconomic level (i.e. when the flat rate percentage time the value of sales equals the amount of VAT paid on purchases), the flat rate may induce over-compensation or over-taxation at sub-sector and/or farm levels (unless all sub-sectors and/or all farms exhibit the same input pattern, which is clearly not the case). Hence, in very general terms, each individual farmer or agricultural sub-sector may face three different situations :

i) an under-taxing flat rate corresponding to the case where the flat rate estimated at the macroeconomic level results in a total amount of compensation which exceeds the total amount of VAT actually paid on input purchases. In such a situation, the considered farmer or sub-sector benefits from an indirect subsidy ;

ii) an over-taxing flat rate corresponding to the case where the flat rate estimated at the macroeconomic level results in a total amount of compensation which is lower than the total amount of VAT actually paid on input purchased. In such a situation, the considered farmer or sub-sector suffers from an indirect tax ;

iii) a neutral flat rate corresponding to the case where the flat rate estimated at the macroeconomic level results in a total amount of compensation which is exactly equal to the total amount of VAT actually paid on input purchased. In such a situation, the VAT-SRAP is neutral for the considered farmer or sub-sector.

Most often however, due to the fact that individual farms and sub-sectors do not exhibit identical input pattern, the VAT-SRAP does not provide identical competitive situations to all farmers or sub-sectors, some of them being taxed while others benefit from a susbsidy through the compensation flat-rate system. In such a case, the VAT regimes applied by EU Member States to their agricultural sectors may lead to competitive distortions on EU agricultural markets.

The proposed synthetic indicator for assessing the degree of neutrality of the VAT-SRAP is defined as follows :

$$P = \frac{VATr - VATp}{VS}$$

where *VATr* is the the total amount of VAT reimbursed through the flat-rate scheme, *VATp* the total amount of VAT paid on purchased inputs and *VS* the total value of sales (VAT excluded).

This indicator may be calculated at the national farm level, at agricultural sub-sector or type of farm level or at the individual farm level. In all cases, it measures the extent of under- or over-taxation implied by

the VAT-SRAP for the considered level. Let suppose for example that the ratio P is calculated at the national farm level for a specific country. In that case, P is interpreted as follows:

i) if $P = 0$, then the VAT-SRAP applied in the considered country is neutral for the domestic agricultural sector as a whole;

ii) if $P > 0$, then the VAT-SRAP results in an indirect subsidy for the domestic agricultural sector in the considered country. In that case, P corresponds to a « ratio tax subsidy »;

iii) if $P < 0$, then, the domestic agricultural sector suffers from a tax penalty due to the VAT-SRAP applied in the considered country. Consequently, P corresponds to a « ratio tax penalty ».

It follows that P constitutes a very useful tool for comparing the extent of under- or over-taxation that applied VAT-SRAPs induce between EU countries or between types of farms, within and between countries.

In each case the level of the computed ratio will determine the protectionist (subsidised) or penalizing (overtaxed) character of each national SRAP *vis-à-vis* its agricultural sector and the various types of farms, at the same time quantifying the deviation of the compensation system from neutrality.

DATA

National farm data

The P ratio is first calculated at he national farm level. In that case, the whole domestic agricultural sector of each EU Member State is considered as a national representative farm.

The value of P is computed for all EU-12 Member States using a VAT-SRAP.

The national farm information needed for computing P is obtained from national agricultural sector accounts. These macroeconomic data are given in annual EUROSTAT publications for each EU-12 State.

The empirical analysis is carrried out for each year over the 1986 to 1993 period. Calculation of P is achieved twice for each Member State and for each studied year. Firstly, annual national P ratios are calculated using the VAT rates and compensation percentages which were in force on the first of January 1993 in each corresponding country. Then, the average of P over the 1986-1993 period is computed for each considered Member State. These national P ratio averages indicate the relative competitive position provided by VAT-SRAPs to agricultural sectors of EU

Member States when the European Single Market was implemented. This is what we call the *analysis at point in time*.

Next, annual national P ratios are calculated in the same way but using the current VAT rates and compensation percentages (i.e. those in force on January 1 of each considered year). Obtained empirical results allow then to analyse the changes in the degree of neutrality of implemented VAT-SRAPs in the various EU Member States during the 1986-1993 period. Such an analysis is directed to highlight potential trends toward over-taxation or under-taxation, through VAT-SRAPs, in EU Member States over the years preceding the implementation of the Single Market. This corresponds to what we call the *analysis of trends over time*.

The computation of our P ratios has been implemented on a spreadsheek as shown in the specific case of Belgium, in the appendix.

P ratios calculated at the national farm level may be considered as a consistent measure of the level of the global indirect subsidy or tax provided by VAT-SRAPs to EU domestic agricultural sectors. Hence, they can be used to check whether implemented SRAPs conform to European law. However, they are not relevant for examining VAT-SRAP induced distorsions on EU agricultural markets. Indeed, macroeconomic data cover a great diversity of agricultural products which prevents to use national farm level P ratios in order to compare competitive advantages resulting from VAT-SRAPs between EU domestic agricultural sectors. For example, comparing such P ratios obtained for the United Kingdom and Greece, in order to detect competitive distorsions brought about by VAT-SRAP between both countries makes no practical sense since the ranges of agricultural product patterns of the two countries are so different that they do not directly compete on agricultural markets. Hence, dealing with this issue requires a complementary farm type level analysis.

Farm type data

As mentioned above, the national farm level analysis is not relevant for examining competitive distorsions induced by VAT-SRAPs implemented in the various EU Member States on agricultural markets. Hence, the above described P ratio is also calculated for different types of farming in each EU country. In that case, each domestic agricultural sector is broken down in several average representative farms characterised by a given type of farming (TF) as provided by the European farm typology used by the Farm Accountancy Data Network (FADN). Hence, obtained P ratios refer to homogeneous groups of farms, that is to farms with similar output patterns which actually compete on agricultural markets. Therefore, such farm type P ratios may be used to detect the competitive distorsions induced by VAT-SRAPs between the various

types of farms within each considered Member Sate and for each type of farms among EU countries.

Farm type P ratios are calculated using the FADN data. This Network annually computes and publishes the data on purchases and sales of each considered TF average representative farm in each EU Member Sate. We retained nine TFs of the FADN typology.

TF A. Cereals
TF B. General cropping
TF C. Horticulture
TF D. Vineyards
TF E. Other permanent crops
TF F. Dairy
TF G. Drystock (cattle, sheep and goat)
TF H. Pigs and poultry
TF I. Mixed (crops and livestock)

The empirical analysis is carried out for each year over the 1986 to 1992 period. Farm type P ratios are calculated in the seame way as described previously for national farm P ratios, so that both the analysis at a point in time and the analysis of trends over time are proposed in this case too.

The computation of the farm type P ratios has been implemented on a spreadsheet as shown in the specific case of the «General Cropping» TF in Germany, in the appendix.

EMPIRICAL RESULTS

National farm level analysis

Static Analysis

The national farm results show how Luxembourg and The Netherlands have an over-compensation of producers (see Table 1), opposite to the rules established by the European Law, since in setting their flat-rate percentages they have not satisfied the conditions established in paragraph 25.3 of the Sixth Directive. In fact, at the beginning of 1993, when the Single Market was inaugurated, both states maintained protectionist forfaits for their producers, signifying a hidden subsidy for Luxembourg and Dutch agricultural production of 1.90 % and 0.37 % of their market values, respectively.

Conversely, Portugal, the United Kingdom and France have imposed clearly penalizing compensation rates on their farmers. Among these

countries we may highlight Portugal, whose SRAP results in an over-taxation of its agricultural production of 3.87 %. This highly negative situation is due to the exemption regime (zero flat-rate compensation) chosen by Portugal for its agricultural sector, which clearly penalises its producers. In fact, Portuguese farmers are obliged to pay input VAT as if they were final consumers. This system of zero-rate compensation means that this country has the most unfavourable value of P in both the national farm and farm levels.

For the other two countries, the United Kingdom and France, it should be made clear that the majority of their farmers are included in perfectly neutral regimes: British producers in the ordinary regime and the French in the special agricultural regime (RSA). These are exceptional cases, since in the remainder of the Member States SRAP is the VAT regime chosen by the immense majority of farmers. For this reason, the effects of over-taxation caused by SRAP in these counties are greatly diminished by the scant application of this particular regime. In both countries only the production of farmers covered by this regime (practically none in the United Kingdom and less than a third in France) suffers from this discriminatory tax regime.

The other Member States have an intermediate position, with slight negative P values, as show in Table 1.

Table 1.
National farm static
results. P values
(1986-1993)

Member State	Static Analysis	
	Mean of P	St. Deviation
Belgium	-1.29 %	0.0023
Germany	-0.56 %	0.0035
Greece	-0.65 %	0.0032
Spain	-1.06 %	0.0026
France	-1.79 %	0.0020
Ireland	-1.55 %	0.0046
Italy	-0.85 %	0.0056
Luxembourg	1.90 %	0.0148
The Netherlands	0.37 %	0.0022
Portugal	-3.87 %	0.0022
United Kingdom	-1.95 %	0.0020

Source: Own calculation based on EUROSTAT data (1986-1993).

Analysis of trends over time

The large number of countries and results (P estimations) made it necessary to focus this analysis on the biggest producers, whose results have the greatest impact on the market. Thus, at a national farm level, only France, Italy, Germany and Spain were analysed.

The results of the analyses of trends over time for the four most representative EU Member States are summarized in Figure 1, which shows clearly how Italy demonstrates a significant trend at national farm level during this period, with a falling P-ratio. This evolution turned positive values of P at the beginning of the period (globally subsidising SRAP estimated about 1 % of the value of sales) into negative values (P = - 0.45 %, i.e. a punitive SRAP). The Italian SRAP thus adapted to the Community VAT laws so as to avoid subsiding all the country's agricultural producers. Similar behaviour, with falling values of P during the period analysed, can be observed in the Spanish case, but always within the limits of the European rules (negative P).

No significant trend can be observed for France and Germany. For the first one, the P-ratio remains fairly constant at about - 2 %, while the whole of the German sector has a more variable P of about - 0.05 %, although always below 0 %.

Regarding the study of trends over time, it is important to note that the cases of Portugal and the United Kingdom were considered in neither the national farm level nor the farm typology level studies. In both cases, until 1993, a « zero rated » VAT system was applied to their agricultural sectors. Although these two systems were in conflict with European VAT legislation, both were perfectly neutral. Under these conditions the study is useless, because our ratio P would always be equal to zero. For this reason the cells of these two countries were not utilised to display their results of trends over time.

Figure 1. Dynamic analysis. Macroeconomic results
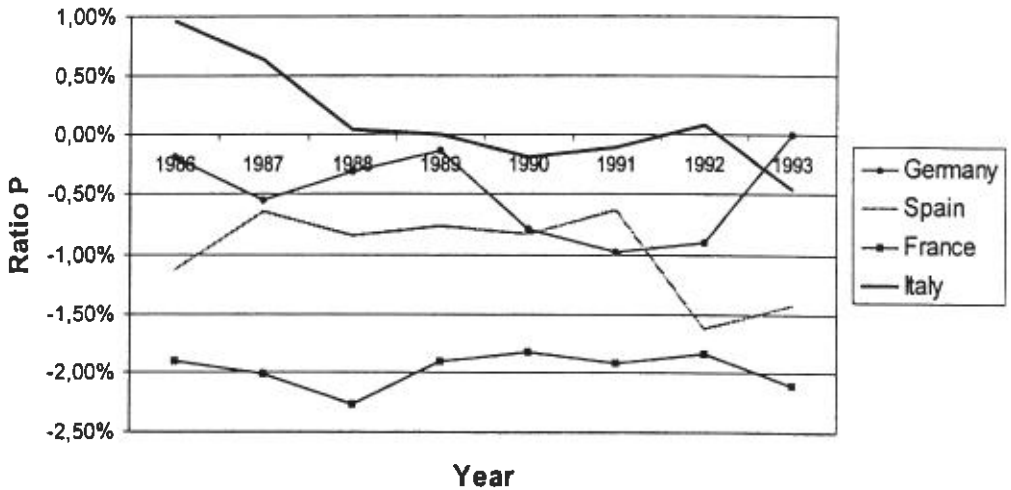
Farm type level analysis

Analysis at national farm level may reveal that the agricultural sector is globally either penalized or subsidized, but if we stop the analysis at this level, we will not see the huge differences hidden under the overall figures. To complete the analysis of special VAT regimes we must proceed to study in detail the problem from a farm typology viewpoint. Such an analysis will reveal that VAT-SRAP tax pressure varies substantially across types of farming within countries (analysis along the lines of tables 2 and 3) and across countries for each type of farming (analysis along column of tables 2 and 3). In the following, we mainly focus on this late result which suggests that competitive distortion from VAT-SRAP implementation are likely to exit on EU agricultural markets.

Dealing with farm typology analysis it should be made clear that FADN data are not provided for certain TFs in certain countries – due to the minor importance of these farms –. In such cases the corresponding P ratios are not obviously calculated.

Static Analysis

Field crops types of farming

Holdings that specialise in *cereal production* (TF A) offer us a range of values of P (Table 2) from - 4.13 % (Portugal) to 0.20 % (Greece). Although this lack of neutrality is representative of the real situation in these countries, it is interesting to point out that this difference in the fiscal treatment of cereals is not significant at market level, because both countries are relatively unimportant in cereals. Consequently it is unlikely that this situation produces significant commercial distortions within European markets.

We can also highlight the negative values of P for cereal farms in France (normal and associated cases), and in the United Kingdom, below - 2.5 %. However, as we explained in the national farm analysis, the values of P for these two Member States are not very representative of their real situations, since they refer to a minority of agricultural producers in the both cases.

Farms specializing in *general cropping* (oil seeds, pulses, textiles and fodder crops) show the smallest value of P (as was expected) in Portugal (P = - 3.56 %) and the maximum in The Netherlands (P = 1.00 %). The greatest difference in fiscal treatment with in the EU is thus 4.56 percent of selling price (see Table 2).

Table 2. Field crops farm typology static results

Member State	Types of farming				
	A Cereals	B General cropping	C Horticulture	D Vineyards	E Other permanent crops
	Mean P	Mean P	Mean P	Mean P	Mean P
Belgium		0.61 %	- 0.81 %		0.14 %
Germany	0.03 %	0.49 %	0.25 %	1.17 %	1.05 %
Greece	0.20 %	0.78 %	- 0.44 %	1.07 %	1.15 %
Spain	- 0.35 %	0.63 %	1.02 %	1.29 %	1.48 %
France Norm.	- 2.81 %	- 2.86 %	- 3.34 %	- 2.23 %	- 2.96 %
France Coop.	- 2.76 %	- 2.74 %	- 2.90 %	- 1.79 %	- 2.56 %
Ireland	- 1.46 %	- 2.05 %			
Italy	- 0.10 %	0.85 %	- 0.18 %	4.96 %	0.88 %
Luxembourg					
The Netherlands		1.00 %	- 0.09 %		0.89 %
Portugal	- 4.13 %	- 3.56 %	- 5.02 %	- 3.06 %	- 4.42 %
United Kingdom	- 2.66 %	- 2.15 %	- 1.62 %		- 2.81 %

Source: Own calculation based on FADN data (1986-1993).

As for the Netherlands, we can confirm the existence of a favourable SRAP – with positive values of P – in Italy, Greece, Spain, Belgium and Germany. This protectionist situation, widespread throughout the EU, must be regarded as distorting competition, since it affects countries with high levels of production of these crops, representing more than 60 % of EU's total production.

The remaining states (Ireland, the UK and the two French cases) present significantly negative values of P for this TF (bellow - 2 %), although only in the Irish case is this really problematic (penalization affecting a large percentage of farmers).

For *horticultural farms* (TF C), Portugal continues to be the country with the most punitive values of P (- 5.02 %), while Spain is in the most favourable position (P = 1.02 %). This result means that the maximum difference for this type of farming is 6.04 % (see Table 2), a highly significant disparity when we take into account the fact that they are neighbours.

It is of interest to notice the possible distorting effects of Spanish protectionism for these agricultural holdings at European level, because Spain has an important production of these crops (over 16 % of EU production). German farmers are in the same favourable situation (P = 0.49 %), and have a similar productive capacity.

On the other hand, beside to the Portuguese case, the most serious case of handicap can be found in Belgium (P = - 0.81 %), where most horticultural production is covered by the SRAP, and is therefore over-taxed by this particular regime.

For *vineyard holdings*, as in the TF of general crops, it is normal to find countries with protectionist SRAPs, such as in Italy, Spain, Germany and Greece. Among them we should focus on the Italian case, where this particular regime offers a subsidy of nearly 5 % (P = 4.96 %) of wine sale prices. This highly favourable fiscal treatment of Italian wine producers has potentially a substantial distorting effect on European markets, due to Italy's high level of production, with 30 % of the value of total EU-12 production, and because practically all Italian farmers are covered by this flat-rate system of compensation.

On the other hand, penalizing SRAPs exist in Portugal and the two French cases. The Portuguese case is the most unfavourable one, with a negative P of - 3.06 (see Table 2). This situation means that the biggest difference in this sector is 8.02 % of sale prices, i.e. the difference between Italy and Portugal.

The extreme values of the P ratio for TF E (*other permanent crops*) are shown by Portugal (- 4.42 %) and Spain (1.48 %) – a 5.90 price differential –, a situation that is aggravated by the closeness of both countries.

We may also mention that other countries, i.e. Greece, Germany, The Netherlands, Italy and Belgium, with this type of farming show positive values of this ratio. This situation of generalized protectionism is highly distorting, because of the large productive capacities of these countries in this sector, such as Italy (35.21 % of the UE-12) and Spain (25.49 %).

Livestock types of farming

Extreme values for *dairy farms* are Portugal (P = - 3.40 %) and Italy (P = 3.67 %) – a range of 7.07 percent points –. Italian protectionist situation is potentially extremely distorting since it is responsible for more than 12 % of EU-12 dairy production. Luxembourg and The Netherlands also have positive P values, while in the two French cases, SRAP represents an over-taxation of more than 2 % (see Table 3).

As regards this type of farming, as in the remaining livestock TFs (F, G and H), we must point out that we have not calculated the values of P for Germany and Spain, because in both countries SRAP legislation excludes holdings that raise livestock independently of the agricultural use of the land, such as is carried out by typical farms in these two states.

The fiscal treatment of drystock farms shows quite considerable differences that reach a maximum in the extreme cases of Portugal (P = - 4.56 %) and Italy (P = 3.59 %). This difference is equal to 8.15 % of the sale prices of these products (see Table 3).

Table 3. Livestock farm typology static results

Member State	Types of farming			
	F Dairy	G Drystock	H Pig and Poultry	I Mixed
	Mean P	Mean P	Mean P	Mean P
Belgium	-0.12 %	-0.29 %	0.24 %	0.10 %
Germany				0.34 %
Greece	-0.55 %	1.04 %	-0.88 %	0.59 %
Spain				-0.03 %
France Norm.	-2.26 %	-2.90 %	-2.59 %	-2.74 %
France Coop.	-2.24 %	-2.88 %	-1.71 %	-2.51 %
Ireland	-1.38 %	-2.64 %		-1.38 %
Italy	3.67 %	3.59 %	4.77 %	3.07 %
Luxembourg	1.19 %	1.90 %		1.68 %
The Netherlands	0.64 %	1.16 %	0.09 %	0.30 %
Portugal	-3.40 %	-4.56 %	-4.40 %	-3.62 %
United Kingdom	-1.00 %	-2.70 %	1.50 %	-1.38 %

Source: Own calculation based on FADN data (1986-1993).

As was the case with the previous TF, it is necessary to emphasize the protectionist treatment offered by the Italian legislation which, affecting 13 % of total EU drystock production (cattle, sheep and goats) gives Italian producers a significant unfair advantage over their competitors in European markets.

Other states with positive P values are Luxembourg, The Netherlands and Greece, while France, the United Kingdom and Ireland impose punitive P values on this farmers, all of them below - 2.5 %. However, this situation is only problematic for Irish production, most of which is included in the SRAP regime, and is therefore overtaxed by it.

Pigs and poultry (TF H) presents the greatest difference in the competitive position between countries because of SRAP. The values of P range from - 4.40 % in Portugal to 4.77 in Italy, – a difference of 9.17 % of the sale prices –. This confirms the situation, already seen in other livestock TFs, of the distortion produced by the Italian protectionist treatment, given Italy's large production volume (15 % of the EU-12).

Also worthy of mention are the values of P obtained by the United Kingdom, Belgium and The Netherlands, with equally strong levels of production, whose SRAPs offer favourable treatment to this kind of farmers (see Table 3).
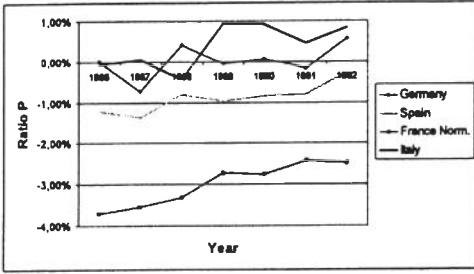
Figure 2. **TF A. Cereals**
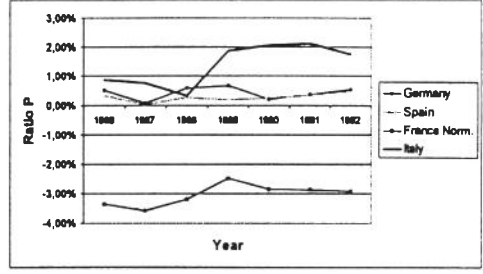

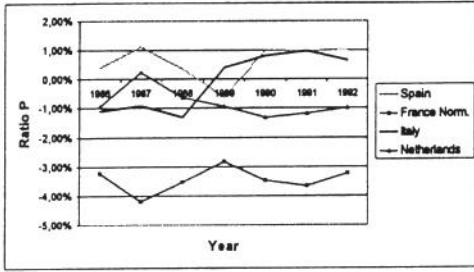Figure 3. **TF B. General Cropping**

Figure 4. **TF C. Horticulture**

Figure 5. **TF D. Vineyards**

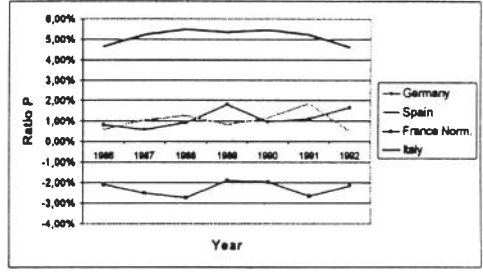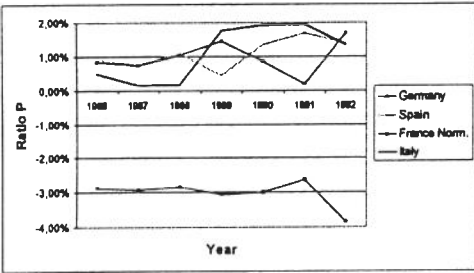Figure 6. **TF E. Other permanent crops**

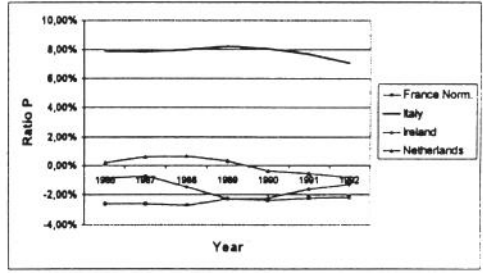
Figure 7. **TF F. Dairy**
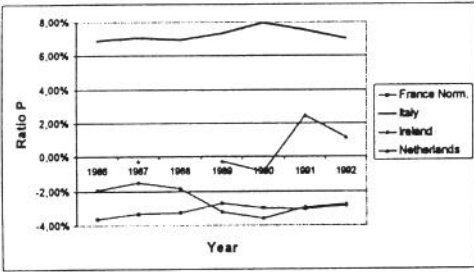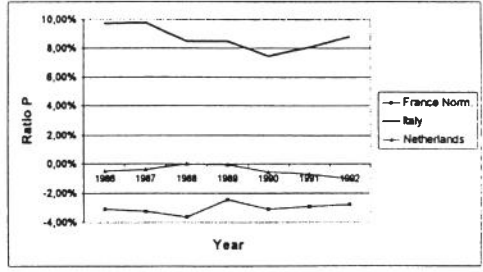

Figure 8. **TF G. Drystock**

Figure 9. **TF H. Pig and Poultry**

Analysis of trends over time

Once we know the comparison among countries, both globally and by farm type, we should look at the analysis of trends over time that can be observed in figures 2 to 9, that illustrate most important producing countries for each type of farming. The graphs show that no tendency could be demonstrated for many of cases considered. Focusing on the largest producing countries, only the following trends over time showed a statistical significance:

France had a rising P in four TFs: cereals, general cropping, dairy and drystock holdings.

Italy presents significant developments in their time series for horti-culture, permanent crops and dairy types of farming. The two first show a favourable evolution, while the last one has suffered a fall in P in the studied period.

In the German case there was a rising trend in P for vineyard and other permanent crops holdings.

For Spain, only TFs A (cereals) and E (other permanent crops) have significant rising P.

Also worth of mention are the representative trends of Irish drystock and Dutch dairy holdings, with rising values of P, and a falling trend for general cropping farms in Ireland.

For horticulture we would like to point out the great variability of P in the course of the period in all cases. This circumstance seems to be due to the speculative character of this type of production, which involves large differences in sale prices (and VAT reimbursed) over the years. The remaining TFs show more stable values of P, due to the price policy control (price stabilisation).

CONCLUDING REMARKS

The first conclusion reached by this study is that the methodology based on the P-ratio gives valuable information on the magnitude of under- or over-taxation among EU Member States and types of farming.

Quantitative analysis at national level shows significant differences in the overall taxation on farm produce under VAT-SRAP, we may remark:

• Results for Luxembourg and The Netherlands reveals over-compensa-tion of producers, maintaining forfaits that are globally protectionist for their producers.

- Conversely, Portugal has a clearly punitive SRAP, resulting an over-taxation of its agricultural production as high as 3.87 %. This highly negative situation is due to the exemption regime imposed by Portuguese legislation as agricultural VAT regime.

- The study of trends over time has shown that Italy presented a significant trend at national farm level, with an evolution of SRAP toward over-taxation.

Proceeding to make the analysis at a farm typology level results demonstrate the existence of wide disparities in the fiscal treatment offered by different SRAPs to national producers :

- Portugal has the most unfavourable *P* values for all the TFs analysed.

- The types of farming that exhibit the largest differences in tax treatment offered by SRAP are the holdings specializing in pigs and poultry, vineyards and drystock, all with ranges of over 8 % of sales values. We believe that these wide ranges are significant enough to be regarded as a distorting factor with respect to competition in these sectors, favouring producers with protective SRAPs and harming those for whom this regime results in over-taxation.

- Another distorting circumstance that needs to be emphasised is the situation of generalized protectionism presented by some types of farming, such as those specializing in general cropping, vineyards, other permanent crops and mixed.

Results both at global country level and detailed farm type analysis point out the need for an urgent action by EU institutions. Our findings demonstrate significant differences in the implementation of special VAT regimes causing real competitive distortions for agricultural markets. This conclusion implies that Member States VAT-SRAP are conflicting against the neutrality principle approved by EU foundation Treaties Treaty of Rome. Consequently an harmonization effort should be exerted through introduction of EU laws including a more precise regulation substituting the old VAT Sixth Directive (1977).

One possible solution to this problem of competition could be the progressive application of the ordinary VAT regime to agricultural producers. The authors believe that the VAT-SRAP might be limited to being a option for smaller farmers. Thus, a maximum volume of sales compatible with SRAP might be fixed for the whole EU. This maximum might thereafter be reduced in the course of a number of years until it reached a very low level. This option would limit under- or over-taxation to smaller producers, who scarcely sell their products on international markets. Meanwhile, progressive tax rates and the harmonization of forfait rates might be achieved.

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APPENDIX

National farm case. Ratio *P* Estimation Spread Sheet (millions ECUs)

BELGIUM		1993	
OUTPUTS	*Net Value*	*VAT rate*	*VAT liability*
Final output	6672		
Final crop output	2491		
- cereals. excluding rice	235	6.0%	14.1
- rice	0	6.0%	0.0
- pulses	4	6.0%	0.2
- potatoes	226	6.0%	13.6
- sugar beet	319	6.0%	19.1
- oil seeds	4	6.0%	0.2
- other industrial crops	33	6.0%	2.0
- fresh vegetables	908	6.0%	54.5
- fresh fruit	259	6.0%	15.5
- citrus fruit	0	6.0%	0.0
- grapes	6	6.0%	0.4
- grapes must and wine	0	6.0%	0.0
- olives	0	6.0%	0.0
- olive oil	0	6.0%	0.0
- fodder plant	17	6.0%	1.0
- flowers and ornamental	270	6.0%	16.2
- other crops	210	6.0%	12.6
Final animal output	4163		
- cattle	1336	6.0%	80.2
- pigs	1285	6.0%	77.1
- sheeps and goats	10	6.0%	0.6
- poultry	238	6.0%	14.3
- milk	962	6.0%	57.7
- eggs	200	6.0%	12.0
- other animal prod.	132	6.0%	7.9
INPUTS			
Intermediate consumption	3924		
- seeds and plants	233	6.0%	14.0
- livestock and animal prod.	151	6.0%	9.1
- energy and lubricants	291	19.5%	56.7
- fertilisers and soil improvers	215	6.0%	12.9
- plant protection prod.	173	19.5%	33.7
- pharmaceutical product	72	19.5%	14.0
- feedingstuffs	1719	6.0%	103.1
- small tools, mainten. and repair	362	19.5%	70.6
- services	303	6.0%	18.2
- others	405	19.5%	79.0
Gross Fixed Cap. Formation	455	19.5%	88.7
VAT reimburse *(a)*			399.2
VAT paid *(b)*			500.1
Difference *(a)-(b)*			-100.8
Ratio *P* tax subsidy/penalty			-1.51%

Source: Own calculation.

This spread-sheet focuses on calculations for Belgium in 1993. In this particular case, the value of *P* is - 1.51%, which suggests that Belgian agricultural production as a whole was overtaxed in 1993 (negative *P*), via a penalization of more than 1.5% of the value of sales.

Typology farm case. Ratio *P* Estimation Spread Sheet (ECUs)

GERMANY TF: B			1992	
(Cod.)	*OUTPUTS*	*Gross Value*	*VAT rate*	*VAT liability*
ST130	*Total output*	89020		
ST135	output crops+crop prods	55410		
ST140	- cereals	26343	8.5%	2063.7
ST145	- protein crops	148	8.5%	11.6
ST150	- potatoes	3989	8.5%	312.5
ST155	- sugar beet	14413	8.5%	1129.1
ST160	- oil-seed crops	2260	8.5%	177.1
ST165	- industrial crops	2186	8.5%	171.3
ST170	- vegetables & flowers	3860	8.5%	302.4
ST175	- fruit	413	8.5%	32.4
ST180	- citrus fruit	0	8.5%	0.0
ST185	- wine and grapes	1041	8.5%	81.6
ST190	- olives & olive oil	0	8.5%	0.0
ST195	- forage crops	202	8.5%	15.8
ST200	- oth. crop output	554	8.5%	43.4
ST205	output livestock+prods	19874		
ST215	- cows milk & prods.	1080	8.5%	84.6
ST220	- beef + veal	3478	8.5%	272.5
ST225	- pigmeat	13943	8.5%	1092.3
ST230	- sheep + goats	24	8.5%	1.9
ST235	- poultrymeat	580	8.5%	45.4
ST240	- eggs	701	8.5%	54.9
ST245	- ewes' and goat's milk	0	8.5%	0.0
ST250	- other livestk + prods	68	8.5%	5.3
ST255	other output	13736	8.5%	1076.1
(Cod.)	*INPUTS*			
ST270	*Total Inputs*	77457		
ST275	Intermediate consumption	49473		
ST280	Specific costs	27278		
ST285	- seeds and plants	3814	7.0%	221.3
ST290	(of which home-grown)	431	8.5%	33.8
ST295	- fertilisers	4738	15.0%	618.0
ST300	- crop protection	4567	15.0%	595.7
ST305	- other crop specific	965	15.0%	125.9
ST310	- feed.(graz. livestock)	2014	7.0%	80.1
ST315	(of which home-grown)	790	8.5%	61.9
ST320	- fdgstfs (pigs+poultry)	10063	7.0%	391.0
ST325	(of which home-grown)	4087	8.5%	320.2
ST330	- other livestock spec.	1117	15.0%	145.7
ST335	Farming overheads	22195		
ST340	- mch & bldg curr. costs	9697	15.0%	1264.8
ST345	- energy	4513	15.0%	588.7
ST350	- contract work	3133	——	0.0
ST355	- other direct inputs	4853	15.0%	633.0
ST360	Depreciation	12073	——	0.0
ST365	External factors	10645	15.0%	1388.5
VAT reimburse *(a)*				6973.8
VAT paid *(b)*				6468.4
Difference *(a)-(b)*				505.4
Ratio *P* tax subsidy/penalty				0.62%

Source: Own calculation.

The example in the table belongs to the case of German holdings specializing in general cropping (TF B) for 1992. The final result of P is 0.62 %, which suggests that these productions in this country were subsidized by the SRAP in that year, assuming a subsidy equivalent to 0.62 % of the sale values.